Building a Semantic-Primitive-Based Lexical Consultation System

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Abstract

The paper describes the design of semantic-primitive-based lexical consultation system and the possible processes which will be performed on a mahine-readable dictionary (MRD) and corpus to produce a machine-tractable dictionary and tractable corpus automatically. and reources are created during or after the processes.

Introduction

Nowadays, there are many MRDs, eg., *WordNet*, *Longman Dictionary of Contemporary English* (LDOCE), the *Merriam-Webster New Pocket Dictionary* and *Webster's Seventh New Collegiate Dictionary*, available for the investigation by large-scale computational methods about theoretical and practical concerns.

However, the knowledge in a MRD is collected and recorded by lexicographers for human readers. So MRD cannot be used directly for natural language processing (NLP) tasks. As a result, we need to extract out semantic and syntactic information buried in the MRD and encoded these information into MTD.

Due to the lacking of linguistic tools that can process the dictionaries to be a more tractable linguistic resources for NLP applications, it is important to construct such linguistic tools for those languages. These linguistic tools can also be used to transform text information given in those languages into a machine-tractable form which in turn can be used as a useful linguistic resource for NLP tasks. Apart from that, these tools can also be adapted to be used in different application areas such as Virtual school or electronic government, to produce machine-tractable mono/multilingual text data upon request in any one particular area. In particular, Word Sense Disambiguation (WSD) is needed in tackling the problem of lexical ambiguity in the transformation from machine-readable source to machine-tractable source. This happens because a word can have more that one meaning.

1 Linguistic Resources

1.1 Machine-Tractable Dictionary (MTD)

A MTD is a dictionary that captures the information either syntactic and semantic from MRD. A MTD consists of usable format and highly structured semantic information for NLP tasks, e.g. information about semantic primitives and Lexical Conceptual Distance Data (LCDD).

1.2 Semantic Primitive

According to (Wierzbicka, 1972), "any semantically complex word can be explicated by means of an exact paraphrase composed of simpler, more intelligible words than the original." These simpler and intelligible words are known as semantic primitives.

There are two kind of semantic primitive: prescriptive and descriptive primitive. Prescriptive semantic primitives is a set of semantic primitives which is defined or prescribed before the course of designing and developing a system. The number for prescriptive semantic primitives always grows because there is always a word in the language which cannot be effectively defined by an available set of prescriptive semantic primitives.

The descriptive semantic primitives is a set of semantic primitive which is derived from a natural source of data such as a dictionary. In this paper, we are using a set of descriptive semantic primitives. So we do not have to deal with the inadequacies of prescriptive semantic primitives. For example, a set of extracted descriptive primitive which is *term#5*[1], *priest#2, roman#7, orthodox#3, perform#1 marriage#4, pair#5, people#5, live#7, together#2* used to define the entries in figure 1.

father#5	-	a *term#5* of address for *priest#2* in some church especially *roman#7* or *orthodox#3* catholic
marry#3	-	*perform#1* a *marriage#4* ceremony
couple#1	-	a *pair#5* of people#5 who *live#7 together#2*

Figure 1:Example entries extracted from a dictionary

1.3 Lexical Conceptual Distance Data (LCDD)

LCDD is a data that is used to determine the relatedness and closeness among the word senses. This data is important in deciding which of the senses is suitable for the words in a given sentence during the process in the sense tagger.

2 Linguistic Tools

2.1 Semantic primitive extractor

Semantic Primitives are identified by searching for self-defined circles of definition in a dictionary. With reference to figure 2, we can identify a self-defined cycle that is sense_1→sense_2→sense_3→sense_1. As a result, sense_1 is identified as semantic primitive (Guo, 1989b).

sense_1 [def] [**sense_2** sense_5 sense_6]
sense_2 [def] [**sense_3** sense_2]
sense_3 [def] [**sense_1** sense_2]
sense_4 [def] [sense_5]

Figure 2: a method to identify semantic primitive from a dictionary

Steps to identify semantic primitives in a MRD:

a. Expanding MRD.
   In this step, we expand every word the definition text for dictionary entries to its word senses.
b. Compute the frequency of each sense entry in the expanded dictionary according to its appearance in definition text.
   In this step, we compute the frequency of the sense entries in definition text. Then, we sort the list by frequency. An entry which has high frequency has high probability is a primitive.
c. Identify semantic primitives using self-defined method.
   In this step, we use the list that is sorted by frequency in step (b) to identify semantic primitives using self-defined method.

2.2 LCDD generator

LCDD generator is a tool to calculate the metric that shows the relatedness among the word senses. It calculates the metric by identifing the definition layers of word senses in order to generate the metric among word senses.

Formula = a*70% + (b + c + d)/3*30%

Note :

n1 = number of the element in the first layer of first target word sense
n2 = number of the element in the first layer of second target word sense
n3 = number of the element in the second layer of first target word sense
n4 = number of the element in the second layer of second target word sense

a = (number of entries overlapping between first layer of first target word sense with first layer of second target word sense) / [(n1+n2)/2]
b = (number of entries overlapping between first layer of first target word with second layer of second target word) / [(n1+n4)/2]
c = (number of entries overlapping between second layer of first target word with first layer of second target word) / [(n3+n2)/2]
d= (number of entries overlapping between second layer of first target word sense with

[1] *term#5* means the 5th word sense of word, *term*.

econd layer of second target word sense) / [(n3+n4)/2]

Example word senses : *forecast#2 fixed#6*
Definition for *forecast#2*: *predict#1 in advance#3*
Definition for *fixed#6*: *specify#1 in advance#3*
Definition for *predict#1*: *make#3 a prediction#1 about*
Definition for *specify#1*: *be specific#1 about*
Definition for *advance#3*: *a change#1 for the better#2 progress#4*
First layer for *forecast#2*: *predict#1 in advance#3*
First layer for *fixed#6*: *specify#1 in advance#3*
Second layer for *forecast#2* :
make#3 a prediction#1 about; a change#1 for the better#2 progress#4
Second layer for *forecast#2* :
be specific#1 about; a change#1 for the better#2 progress#4

n1= 2; n2= 2; n3= 5; n4= 4;
(overlapping only happens between words that are tagged in the definition layer)
a = 1 / [(2 + 2)/2]
b = 0 / [(2 + 4)/2]
c = 0 / [(5 + 2)/2]
d = 3 / [(5 + 4)/2]
∴ LCDD(forecast#2, fixed#6)
= a*70% + (b + c + d)/3*30%
= 0.5*70% + (0 + 0 + 0.67)/3*30%
= 35% + 0.067%
= 35.067%

Figure 3:Example calculation of generating LCDD

2.3 Part-of-speech tagger (POS tagger)

Part-of-speech tagger is a tool which assigns part-of-speech information to the words in a sentence. It extracts out syntactic information from definition texts in MRD. Besides, this part-of-speech will be used in sense tagger in deciding the correct senses. (Stenvenson et.al, 2000)

Here, we are using Qtag is a part-of-speech tagger. It has been developed at Corpus Research in Birmingham and is freely available for research purposes (For more information on this see http://www-clg.bham.ac.uk/tagger.html). Basically, Qtag is an implementation of a probabilistic tagger, based on Hidden Markov Model technology

2.4 Sense tagger

Sense tagger is a tool that assigns sense tag to the words in a given sentence by performing WSD to them. It will use the data from LCDD, part-of-speech and a simple summation algorithm in deciding the correct sense for the words given in a sentence. Please refer to (Lim et al. , 2002) for further information about the simple summation algorithm. The approach used in the sense tagger is unsupervised learning algorithm.

Currently, the sense tagger consists of two processes:

a. Dictionary look-up process
b. Chunking process.
   i. Chunking the sentence
   ii. Numerical calculation process
   iii. Keeping sense tags
   iv. Selecting and assigning a suitable sense tag

After the sense tagger has received the input sentence, first of all, it will try to look for the definition for each of the words in the MTD. The input sentence is split into chunks of words. This approach also agrees with past observations that human only requires a small window of a few words to perform WSD. (Choueka & Lusignan, 1985). A chunk of 7-words is selected because there is a finite span of a human immediate memory and that for a lot of different kinds of test materials this span is about seven items in length (Miller, 1956). This will impose on the human ability in processing a chunk of information. So, we make an assumption that a chunk of 7-words will consist of the comprehensive information needed for the sense tagging process since users (human) provide the input sentence.

Then, the sense tagger will assign sense tag to each word in a chunk using simple a summation algorithm. The result will be kept. After that, sense tagger will continue to assign sense tag to the other chunks of words until the last chunk. Finally, comparisons among the sense tags that have been assigned for the each word in the sentence during sense tagging for chunks of words are done. Then, the suitable sense tag will be assigned to each word of the sentence. If sense tagger unable to decide to assign which

sense tag, it will assign the most frequent sense eg, first sense in WordNet.

The simple summation algorithm will be further improved by using dynamic programming techniques.

3 Dictionaries processing on MRD

Here, we describe the detail design of a semantic-primitive-based lexical consultation system in creating tractable form of outputs by using linguistic tools such as semantic primitive extractor, LCDD generator, part-of-speech tagger and sense tagger. Steps in creating the linguistic tool such as sense tagger and resource such as MTD as illustrated in figure 4 are:

a. Constructing a MTD from a MRD involves the following steps :
   i. The definition text in the MRD is tagged with part-of-speech information by using the POS tagger.
   ii. Semantic primitives are extracted from the MRD by using the semantic primitive extractor.
   iii. WSD will be performed on the definition text of the semantic primitives using a general MTD using the sense tagger. General MTD is a MTD that contains knowledge about different kind of domain. Each of the words in the definition text is assigned with a sense tag.
   iv. LCDD is generated for semantic primitives using the LCDD generator.
   v. By using semantic primitives and LCDD, words in the definition text in the MRD is assigned with a sense tag using sense tagger.
   vi. LCDD is generated among entries in the MRD.

b. A sense tagger will also be constructed to perform WSD to the samples of corpus text from various prospective application areas by using the constructed MTD.

Conclusion

As a conclusion, this paper propose a method to produce a machine-tractable form text from machine-readable text by using MTD is important to assist natural language processing of text in a given domain. This method is important because it let us analyse documents especially nowadays too many documents can easily be obtained with the emergence of Internet.

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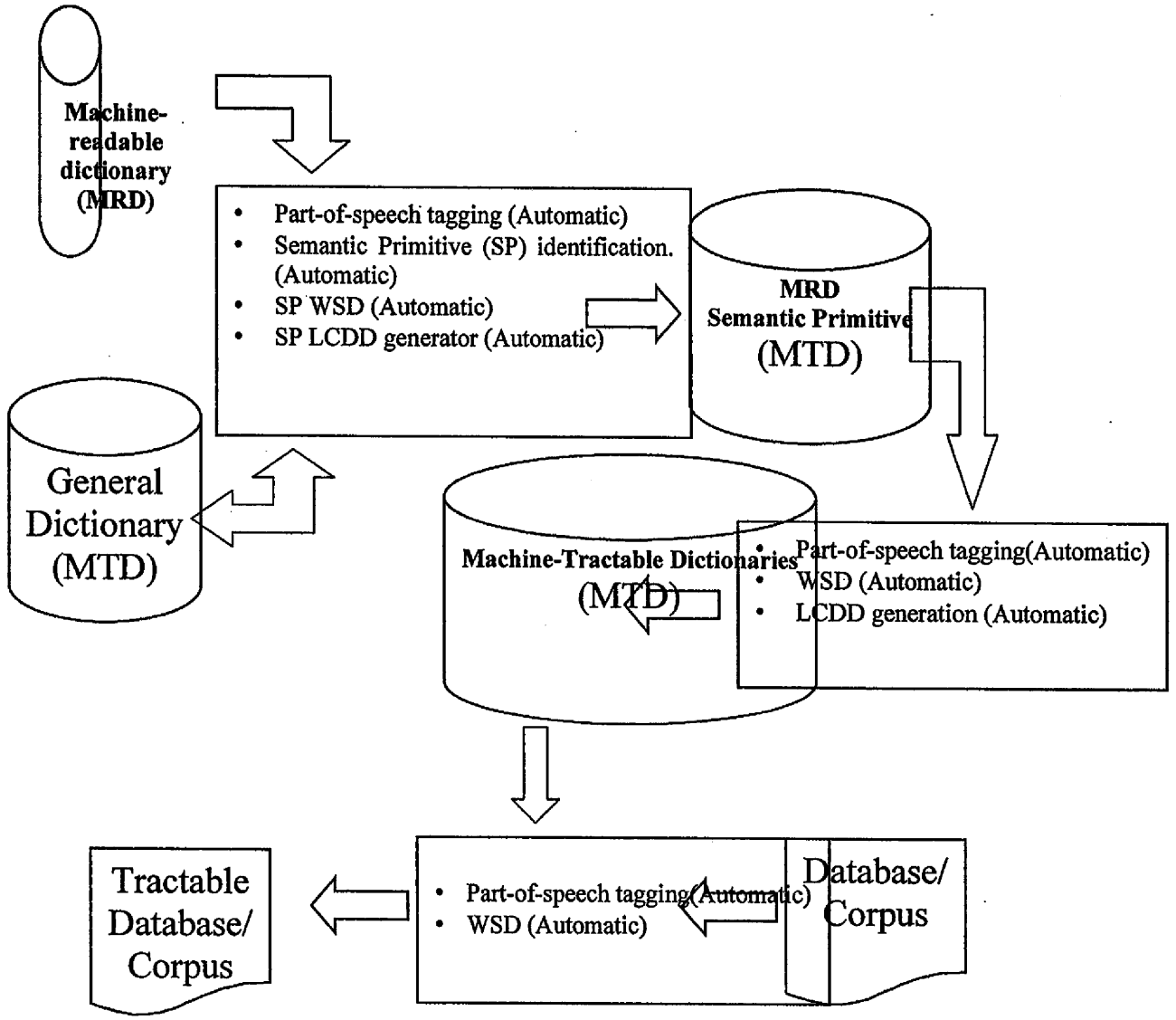


Figure 4 : System Architecture

Building a Semantic-Primitive-Based Lexical Consultation System

prepared by Lim Beng Tat

Supervisor: Dr. Tang Enya Kong

Outline

- Introduction
  - Objective
- Literature Survey
- Lexical Consultation system
  - Example data: Input and output.
  - Overall design and tools.
  - Applications

Introduction

- More than one billion documents on the Internet (Inktomi and the NEC Research Institute, 2000)
- Company documents
- Therefore, how to extract information from these documents?

Introduction (Cont)

- Online domain lexicons:
  - Computer - webopedia.com
  - Chemistry - chemnet.com
  - Astronomy, Chemistry, Mathematic and Physics - scienceworld.wolfram.com
- Other offline lexicons:
  - Company Databases

Introduction (Cont)

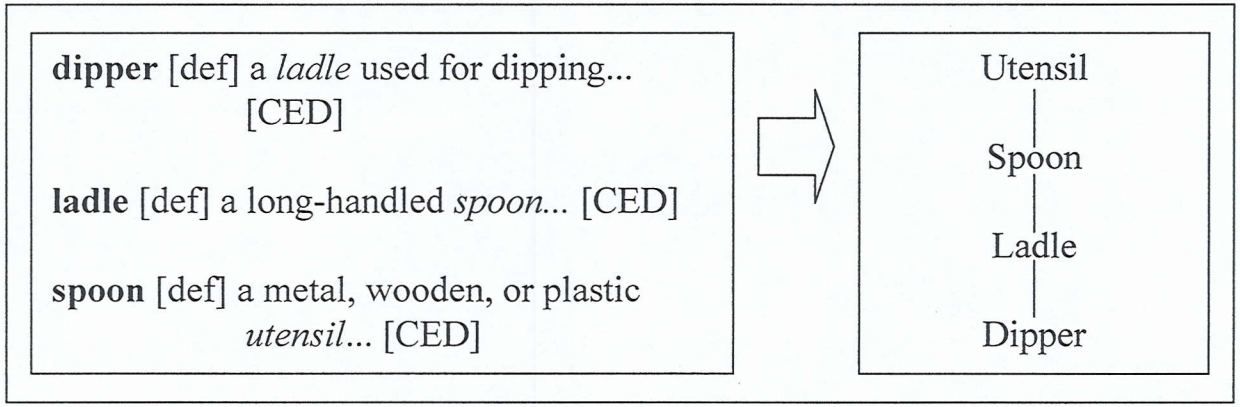
- However, most of lexicons are built for human use.
  - Do not offer immediately usable resources
  - E.g. *Hypernym/hyponym* relation not explicitly defined.
- How to provide semantic and syntactic information buried in lexicons?
- How to use these lexicons on the domain documents?

Objective

- Constructing tractable domain lexicons
  - information such as semantic and syntactic information explicitly defined
- Analyzing domain documents using the newly constructed domain lexicons.

Literature Survey

- Lexicon
  - Extracting lexical knowledge from Machine Readable Dictionary (MRD)
    - Semantic hierarchy (Amsler,1980; Chodorow,1993)



Note: CED = Collins English Dictionary

Literature Survey (Cont)

- Defining formulae (Markowitz, 1986)
  - Defining formulae or significant recurring patterns

- Problem:
  - Ambiguous words
  - Definition inconsistencies
    - Circularity

e.g. **tool** an *implement,* such as a hammer.

implement a piece of *equipment*; *tool* or *utensil.*

utensil an *implement, tool* or *container.*

Literature Survery (Cont)

- Absence of hypernym

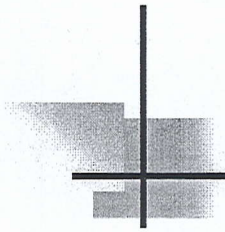
  Eg. **corkscrew** a pointed spiral *piece* of metal... [W9]

  dinner service a complete *set* of plates and dishes...[LDOCE]

- MRD for human use
  - e.g. **flower#1** a plant cultivated for its blooms or blossoms ...[WordNet]
    - lacks a detailed description

Semantic Information

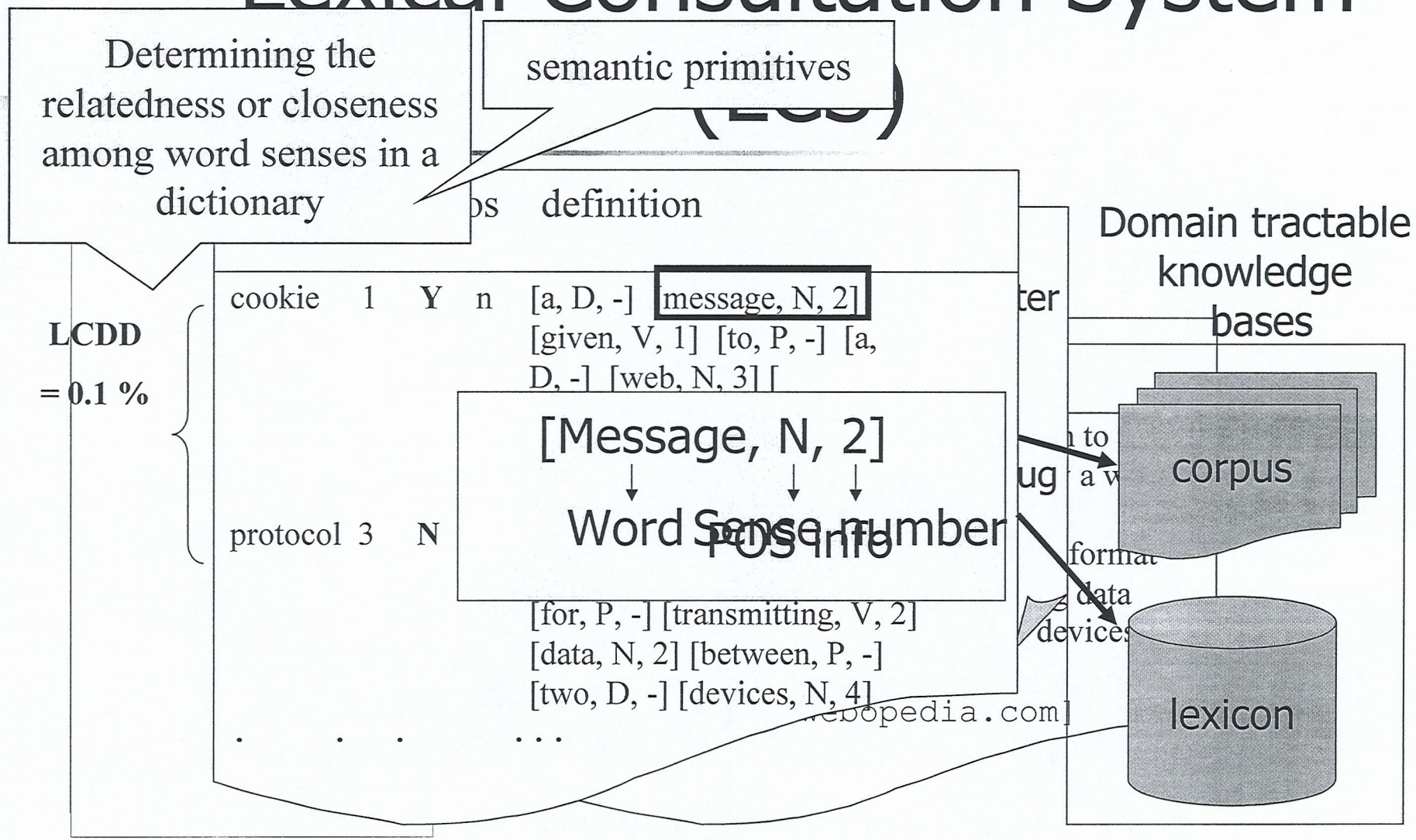
- Semantic primitive
  - Simpler term (Wierzbicka, 1977)
  - e.g. word *watch* ⟶ see someone do something
  - Overcome circularity, obscure definition and etc in a MRD.
- Correct meaning
  - Word sense disambiguation
    - intermediate task (Wilks and Stevenson, 1996)
  - E.g. word *bank*
- Lexical Conceptual Distance Data (LCDD)
  - measure relatedness among words (Guo, 2002)



Syntactic Information

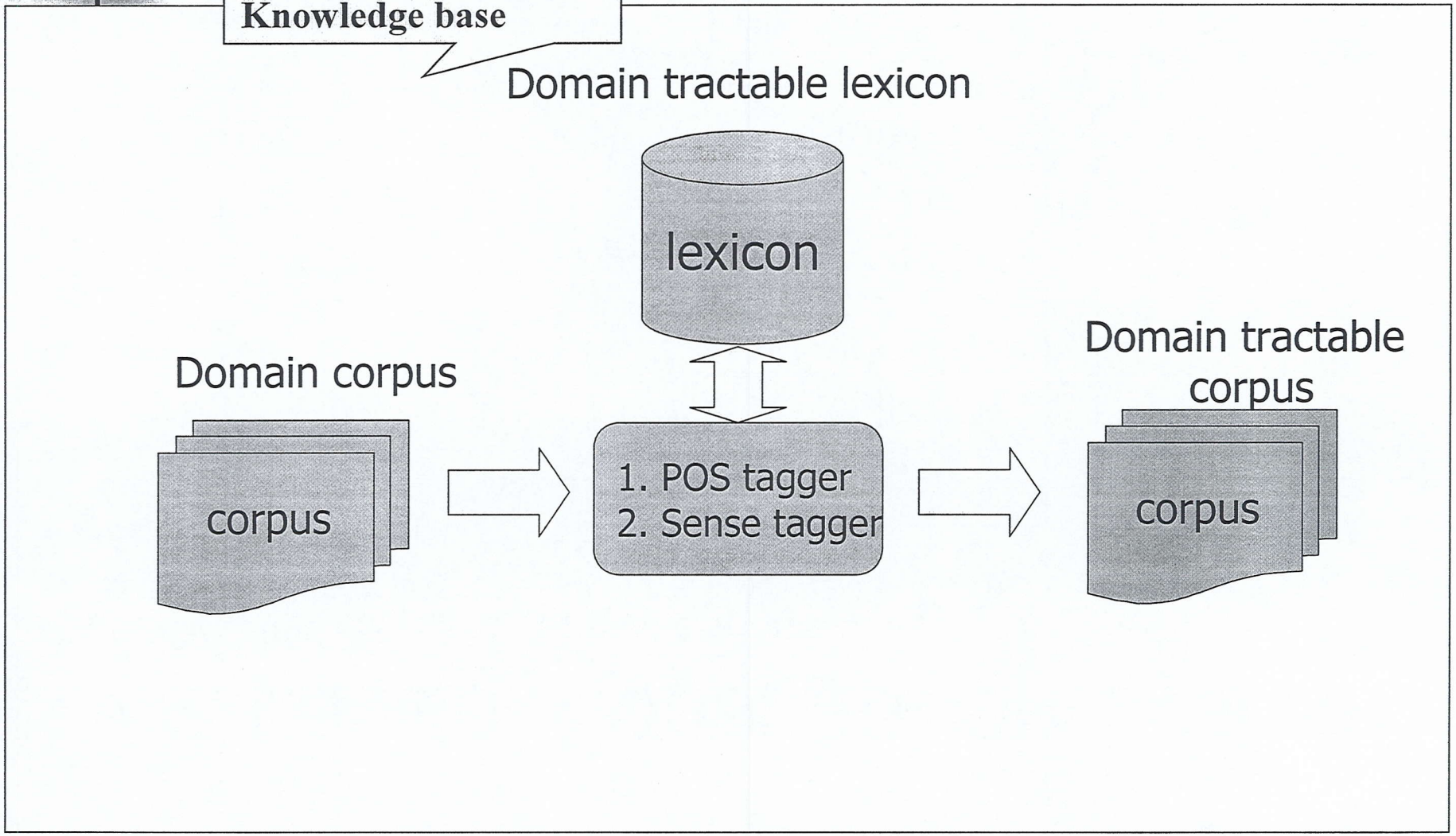
- Part of speech
  - E.g. verb, adjective, noun, determiner, preposition and etc.

Lexical Consultation System



Lexical Consultation System (LCS)

Pipillon project, FEM or Bilingual Knowledge base



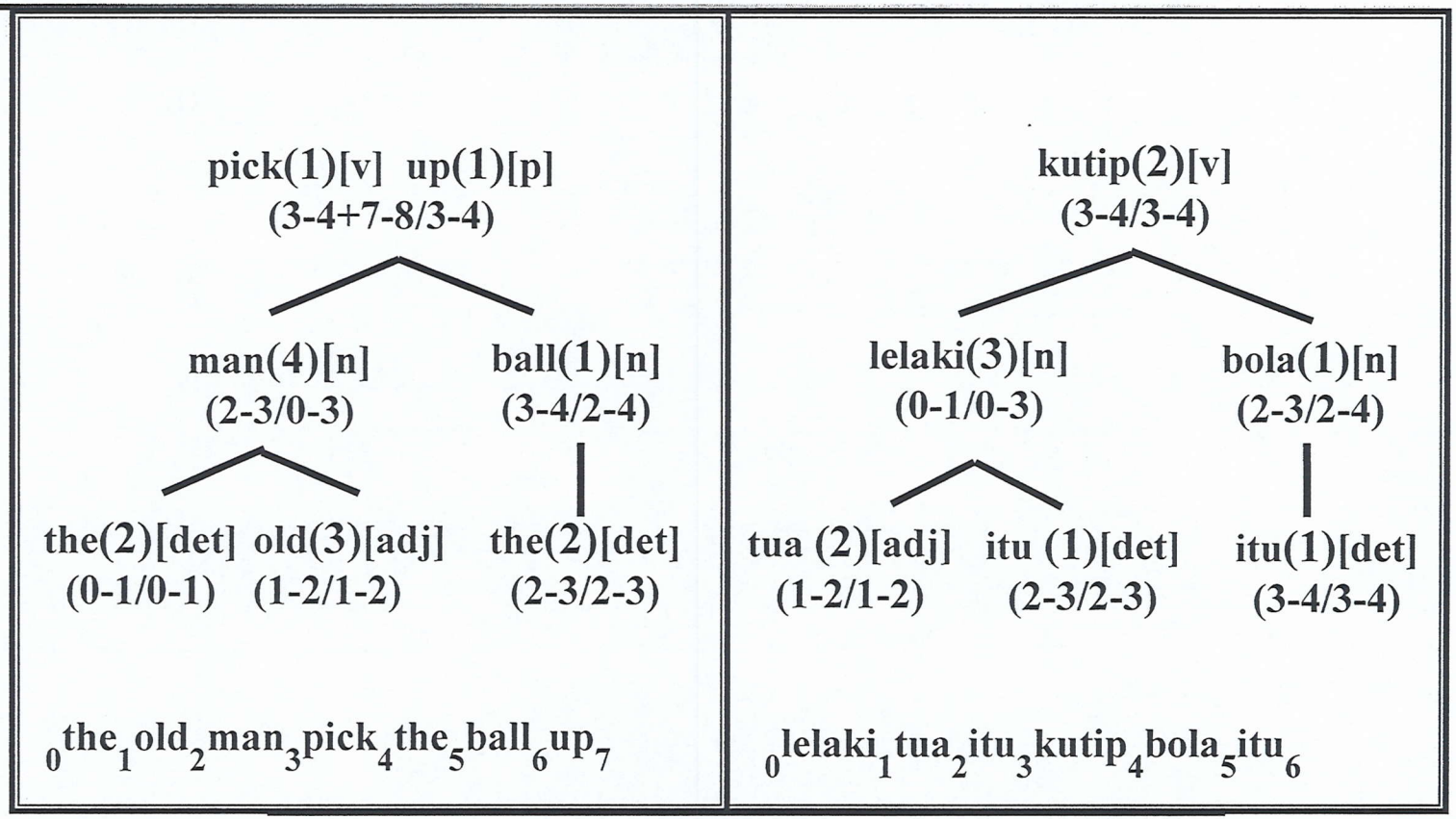
Result

- SENSEVAL-2 competition

  (WordNet 1.7 pre-release version has 192, 460 entries.)

  - Precision: 32.4 % (801 correct of 2473 attempted entries)
  - Recall: 32.4 % (801 correct of 2473 total entries)
  - Attempted: 100.0 % (2473 attempted entries of 2473 total entries)

Example application

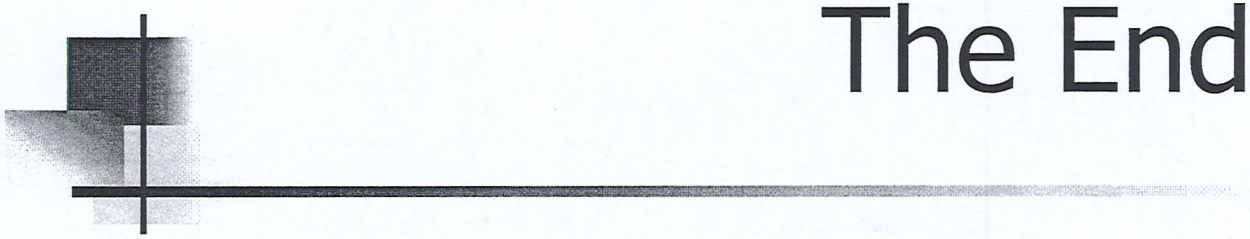


Tractable Bilingual Knowledge Bank (BKB)

[Source: Mosleh, 2002]

Conclusion

- Prototype
- Constructed sense tagger can perform as good as some sense taggers in the SENSEVAL-2 competition
- Worthwhile to be further explored



The End

Thank you.

Any comments please send to

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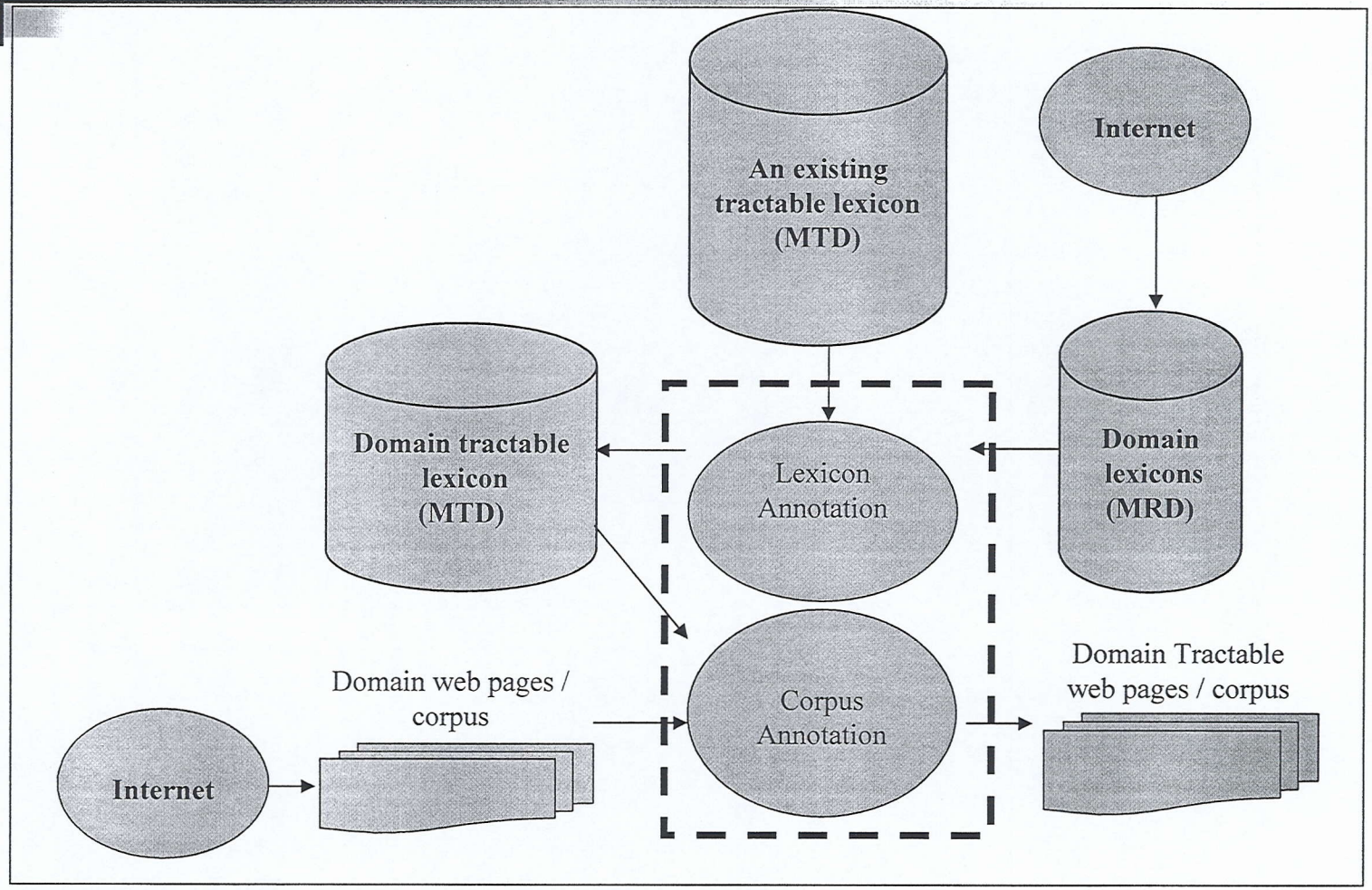
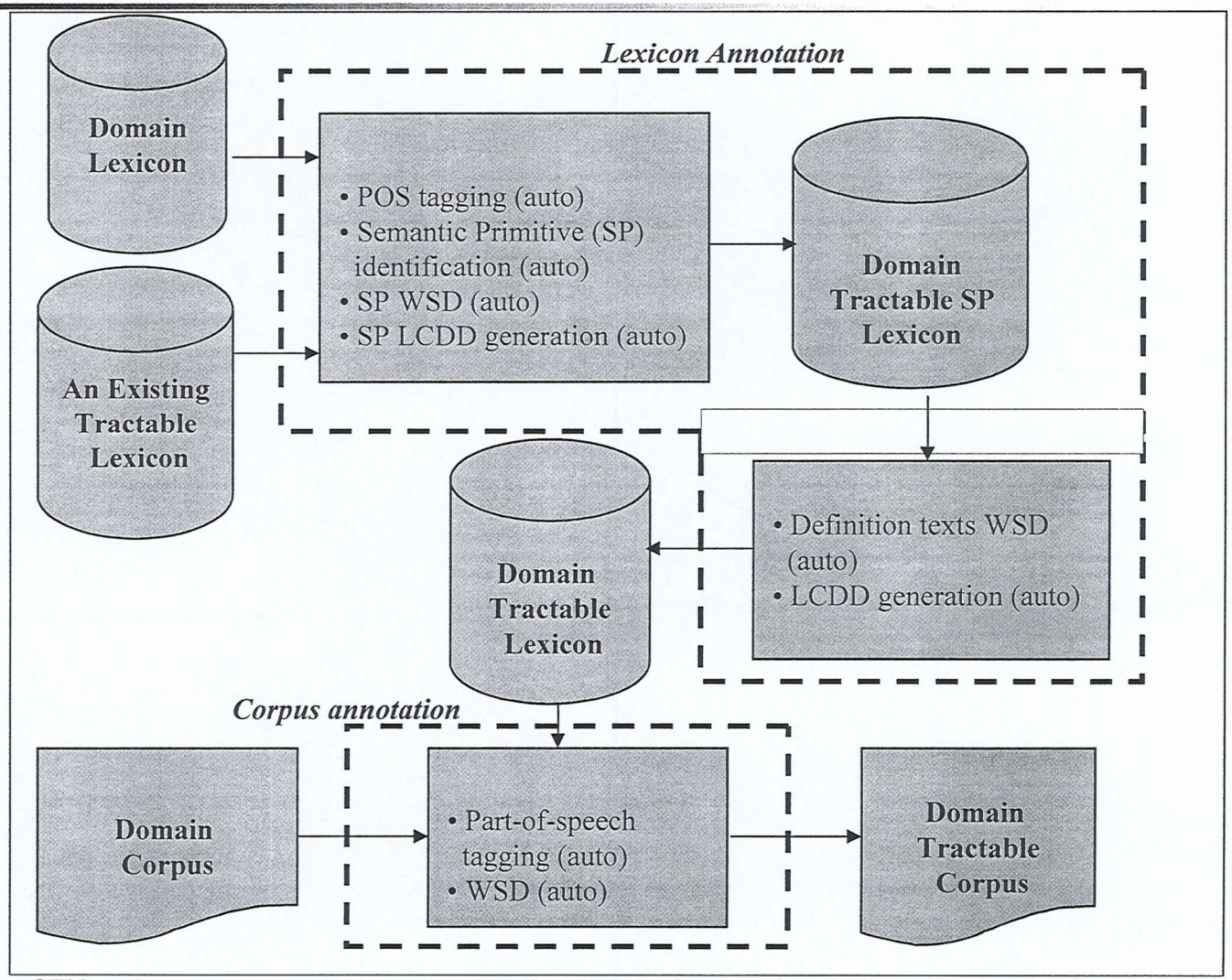
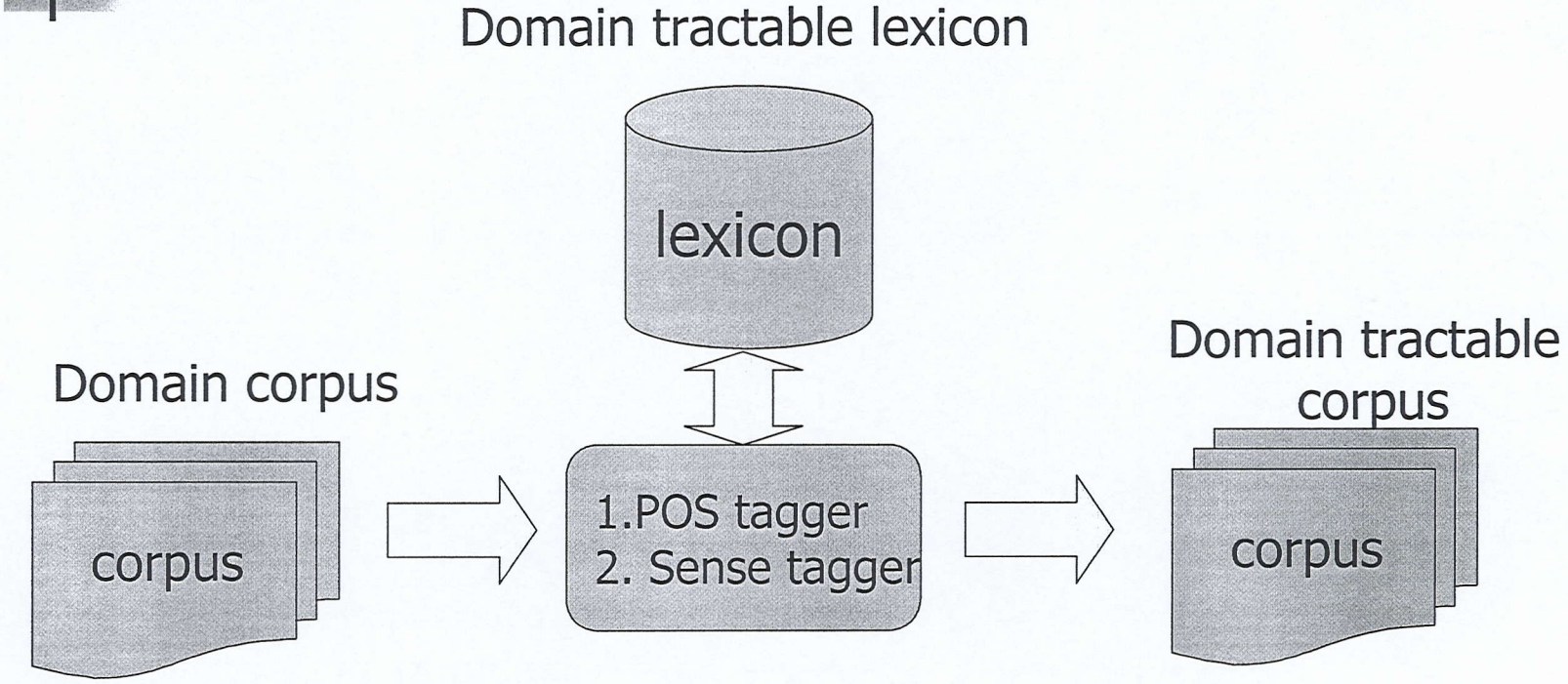
Overall Picture



Detail implementation



LCS (Cont)


Domain tractable lexicon
lexicon
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1.POS tagger
2. Sense tagger
Domain tractable corpus
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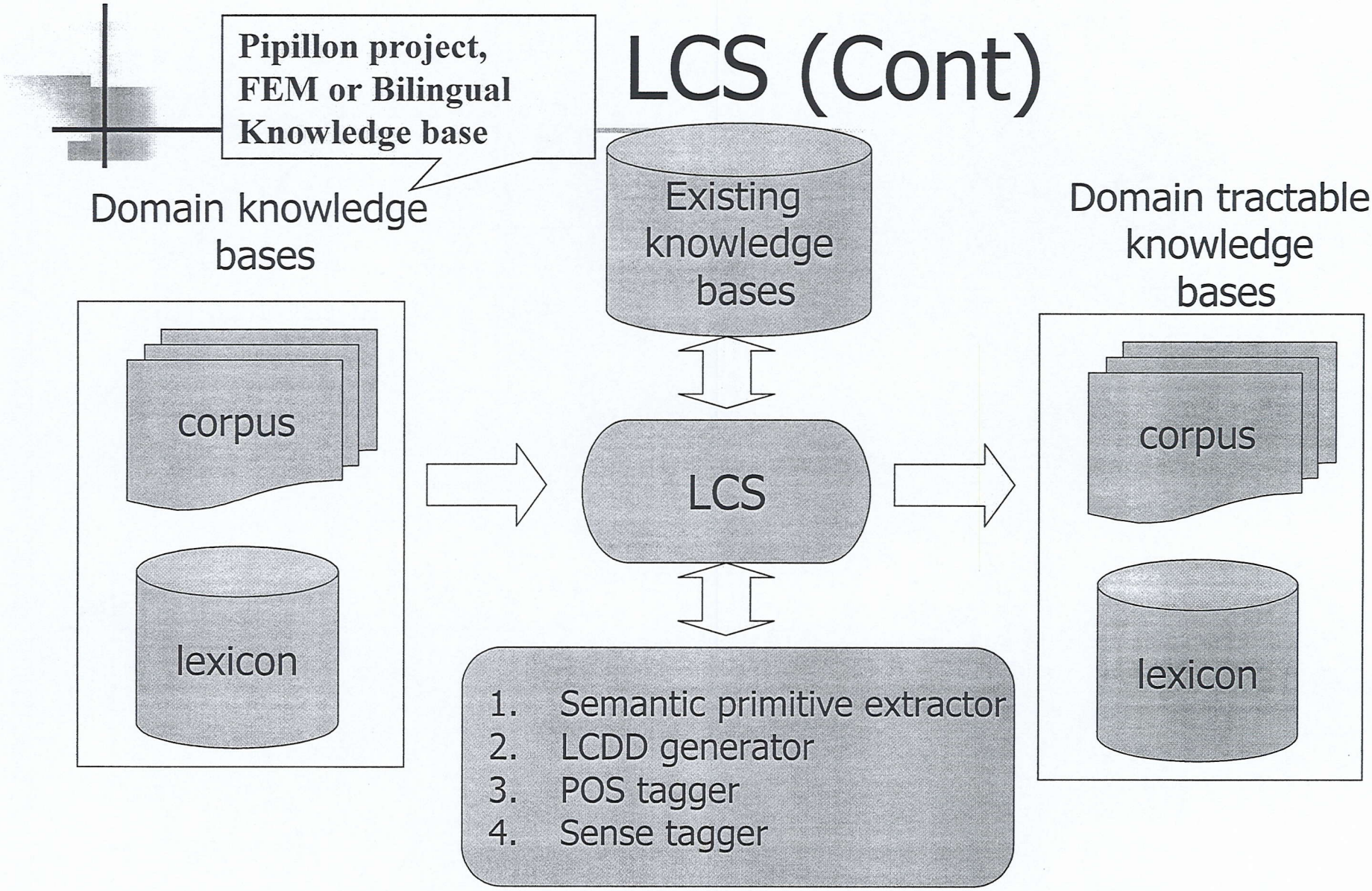
LCS (Cont)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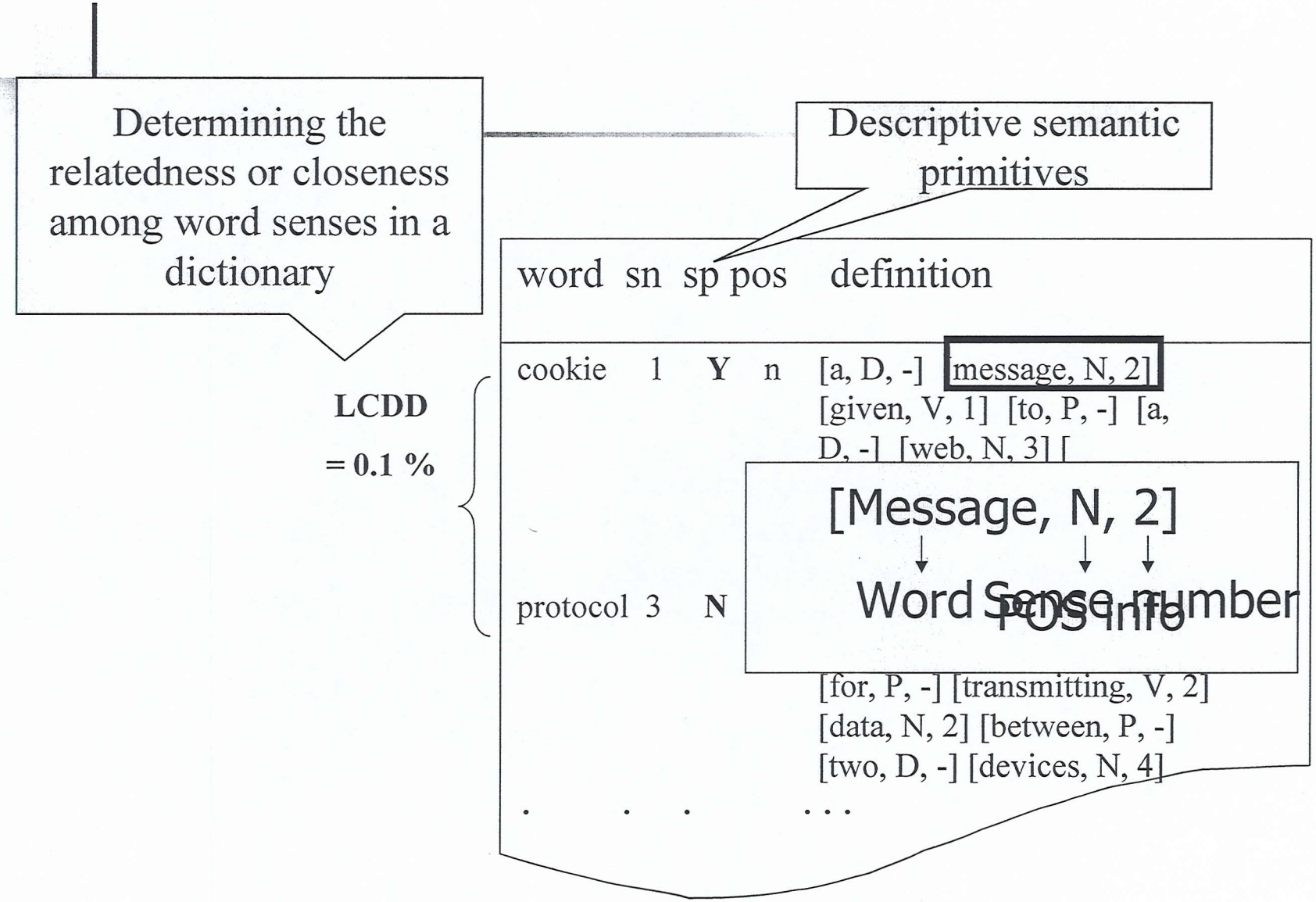
2. LCDD generator
3. POS tagger
4. Sense tagger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LCDD
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[Message, N, 2]
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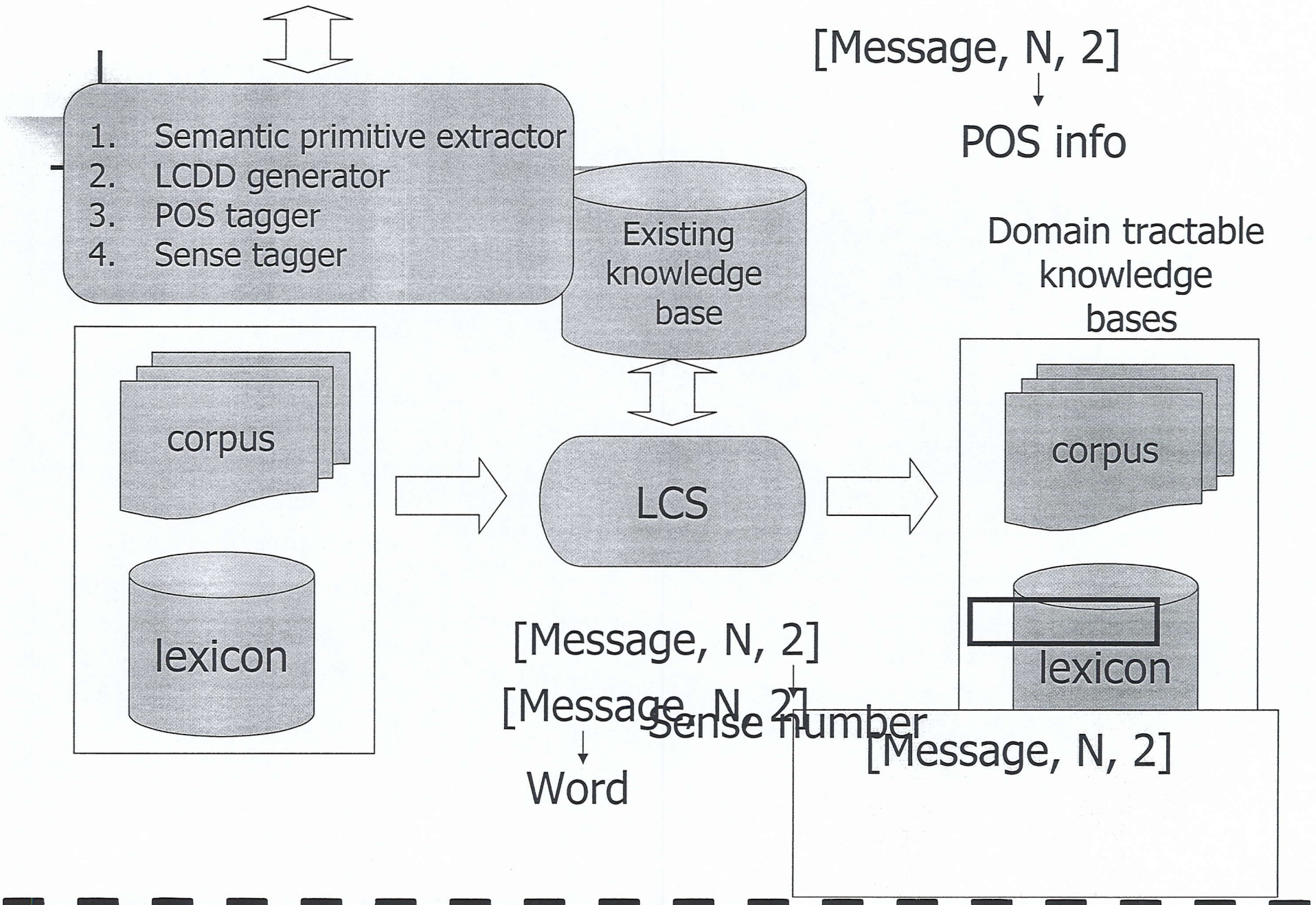
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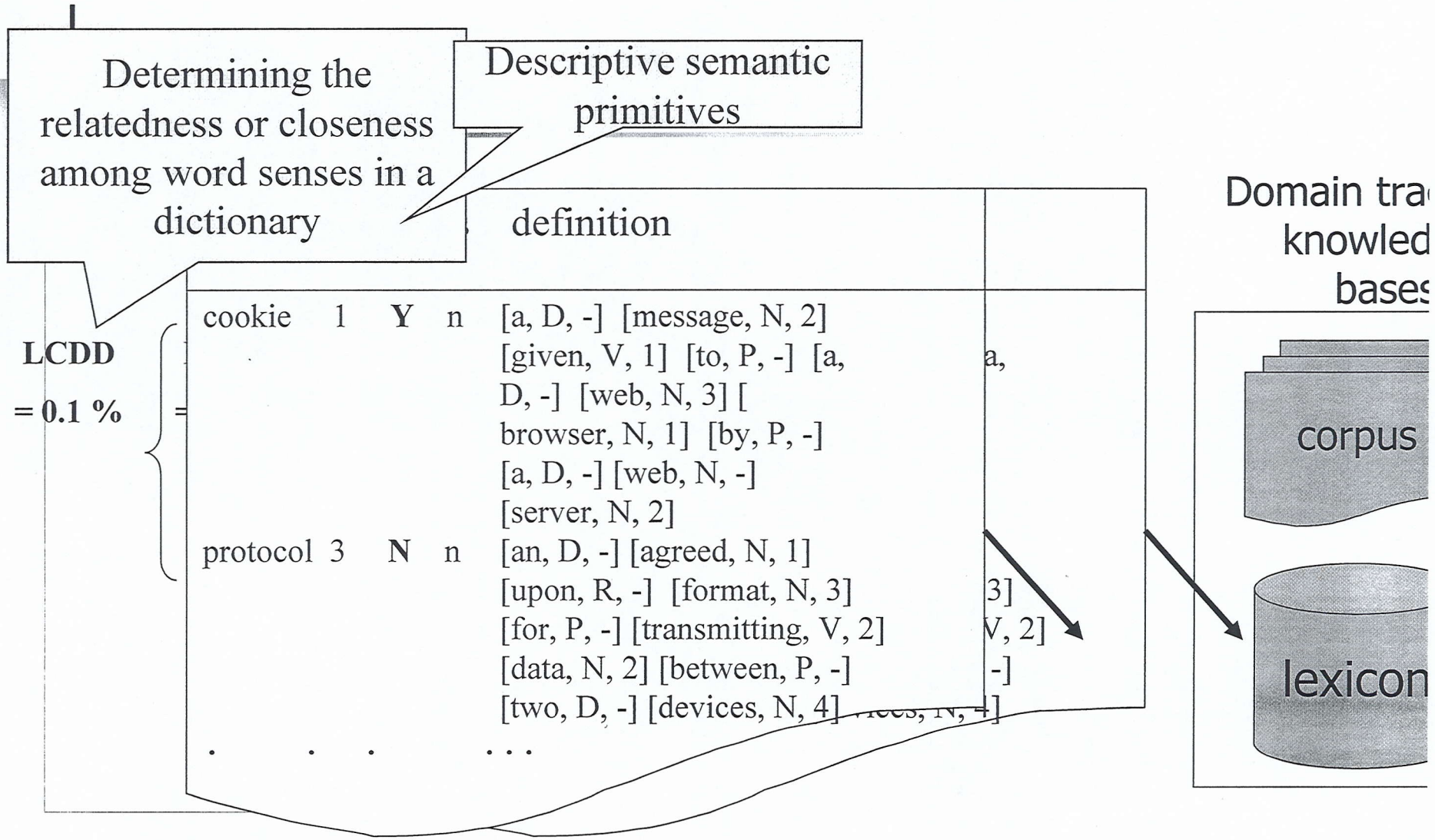
Determining the relatedness or closeness among word senses in a dictionary
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definition
LCDD
= 0.1 %
cookie 1 Y n [a, D, -] [message, N, 2] [given, V, 1] [to, P, -] [a, D, -] [web, N, 3] [browser, N, 1] [by, P, -] [a, D, -] [web, N, -] [server, N, 2]
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Concept Labels in the *GoiTaikei* Common Noun Hierarchy

The lists here show rough English translations from the original Japanese, and are meant as reference for non-speakers of the Japanese language. In cases of confusion and doubt, *GoiTaikei – A Japanese Lexicon CDROM* should always be the definitive guide.

1 Top Level Concepts

1: Noun
- 2: Concrete
  - 3: Agent
    - 4: Person
    - 362: Organization
  - 388: Place
    - 389: Facility
    - 458: Region
    - 468: Nature
  - 533: Object
    - 534: Animate
    - 706: Inanimate
- 1000: Abstract
  - 1001: Abstract thing
    - 1002: Mental thing
    - 1154: Abstract thing (behavior)
  - 1235: Event
    - 1236: Human Activity
    - 2054: Phenomenon
    - 2304: Natural phenomenon
  - 2422: Abstract Relationionship
    - 2423: Existence
    - 2432: Categorisation System
    - 2443: Relation
    - 2483: Characteristic
    - 2507: State
    - 2564: Form
    - 2585: Numerical
    - 2610: Location
    - 2670: Time

2 Lower Level Concepts

4: Person
5: Human
6: Form of address
7: First-person
8: First-person Singular
9: First-person Singular Male
10: First-person Singular Female
11: First-person Plural
12: First-person Plural Male
13: First-person Plural Female
14: Second-person
15: Second-person Singular
16: Second-person Singular Male
17: Second-person Singular Female
18: Second-person Plural
19: Second-person Plural Male
20: Second-person Plural Female
21: Third-person
22: Third-person Singular
23: Third-person Singular Male
24: Third-person Singular Female
25: Third-person Plural
26: Third-person Plural Male
27: Third-person Plural Female
28: Indefinite-person
29: Indefinite Singular
30: Indefinite Plural
31: Oneself and others
32: Oneself
33: Others
34: Each
35: Public and Private
36: Public
37: Private
38: Affix human
39: Affix human Singular
40: Affix human Singular Male
41: Affix human Singular Female
42: Affix human Plural
43: Honorific title
44: Honorific title Male
45: Honorific title Female
46: Biological feature
47: Man Woman
48: Man
49: Woman
50: Old Young
51: Child
52: Boy
53: Girl
54: Juvenile
55: Boy
56: Girl
57: Youth
58: Youth Male
59: Youth Female
60: Adult
61: Adult male
62: Adult female
63: Old person

64: Old people male
65: Old people female
66: Body circumstance
67: Figure
68: Sick Injured
69: Sick person
70: Injured person
71: Deceased
72: Kinship relation
73: Family
74: Married couple
75: Husband
76: Wife
77: Parent Grandparent Ancestral
78: Parent
79: Father
80: Mother
81: Grandparent
82: Grandfather
83: Grandmother
84: Ancestral
85: Child Grandchild Descendant
86: Child
87: Son
88: Daughter
89: Grandchild
90: Grandson
91: Granddaughter
92: Descendant
93: Sibling
94: Sibling senior
95: Older brother
96: Older sister
97: Sibling junior
98: Younger brother
99: Younger sister
100: Kindred
101: Uncle Aunt
102: Uncle
103: Aunt
104: Nephew niece
105: Nephew
106: Niece
107: Cousin
108: Cousin Male
109: Cousin Female
110: Kindred
111: Personal relation
112: Society relation
113: Companion Member Partner
114: Companion Member
115: Companion
116: Comrade
117: Follower
118: Companion
119: Member
120: Outcast Nuisance person
121: Partner
122: Partner
123: Enemy Ally
124: Friend Intimate person
125: Friend
126: Acquaintance
127: Lover
128: Lover male
129: Lover female
130: Host Guest
131: Host
132: Host male
133: Host female
134: Guest
135: Visitor
136: Customer
137: Relative position
138: Teacher Student
139: Teacher
140: Student
141: Superior Subordinate
142: Superior
143: Subordinate
144: Senior Junior
145: Senior
146: Junior
147: Master Servant
148: Master
149: Servant
150: Social group
151: Race Ethnic group
152: Race
153: Ethnic group
154: National
155: Fellow countryman
156: Foreigner
157: Residence circumstance
158: Inhabitant
159: Immigrant Refugee
160: Traveler
161: Social class
162: Ruler Retainer
163: Monarch
164: Lord
165: Retainer
166: Authority Populace
167: Authority
168: Populace
169: Status
170: Nobility
171: Warrior
172: Commoner
173: Menial
174: Capital and labor
175: Capitalist
176: Labourer
177: Wealth and poverty
178: Wealthy
179: Poor
180: Ability inclination
181: Ability
182: Great men ordinary person
183: Great man
184: Ordinary person
185: Founder Follower
186: Founder
187: Follower
188: Wise Fool
189: Wise man
190: Fool
191: Expert Beginner
192: Expert
193: Beginner
194: Hero Coward
195: Hero
196: Coward
197: Inclination
198: Hardworker Lazy person
199: Hard worker
200: Lazy person
201: Eccentric Ordinary
202: Eccentric
203: Hobbyist
204: Enthusiast
205: Gourmet
206: Lustful person
207: Eccentric
208: Eccentric
209: Ideologist
210: Lunatic
211: Ordinary man
212: Good man Bad man
213: Good man
214: Bad guy
215: Bad guy
216: Ruffian
217: Criminal
218: Prisoner
219: Quasi-human
220: Deity Buddha
221: Spirit
222: Demon Monster
223: Occupation position role
224: Occupation
225: Professional occupation
226: Professional job
227: Professional medical care
228: Doctor
229: Pharmacist
230: Nurse
231: Professional technology
232: Professional
233: Attorney
234: Guide
235: Consultant
236: Teacher Student
237: Teacher
238: Student
239: Scholar Researcher
240: Artist
241: Writer Poet
242: Artist Calligrapher
243: Musician
244: Artist
245: Journalist
246: Talent contestant
247: Musician
248: Singer
249: Performer
250: Entertainer
251: Contestant
252: Talent Contestant

253: Religion person
254: Monk
255: Priest
256: Clergyman
257: Pilgrim
258: Fortuneteller
259: Administrative Managerial
260: Politician
261: Government official
262: Administrator
263: Judicial official
264: Judge
265: Public prosecutor
266: Diplomat
267: Government official
268: Entreprenuer
269: Administrative position
270: Others
271: Office work job
272: Sales job
273: Merchant
274: Salesmen
275: Agriculture Forestry Fishery
276: Farmer
277: Fisherman
278: Hunter
279: Woodcutter
280: Breeder
281: Operator
282: Operator factory
283: Operator construction site mine
284: Operator
285: Technical skill job
286: Craftsman
287: Haircut teacher hairdresser
288: Transport communication industry
289: Transport industry
290: Carrier
291: Crew
292: Driver
293: Crew
294: Transport industry
295: Communication industry
296: Postal industry
297: Telecomunications industry
298: Security job
299: Military
300: Police
301: Fireman
302: Guard
303: Service job
304: Servant
305: Servant male
306: Servant Female
307: Connection customer industry
308: Boy
309: Waitress
310: Geisha
311: Free outlaw occupation
312: Beggar
313: Thief
314: Mafia
315: Prostitute
316: Spy
317: Free outlaw occupation
318: Position
319: King Lord
320: King
321: Nobility
322: Cabinet minister
323: Chief
324: Assistant director
325: Board of director
326: Staff
327: Officer rank
328: Officer
329: Private soldier
330: Contestant class
331: Designation
332: Position
333: Role
334: Leader
335: Management
336: Leader
337: Person in charge
338: Relation
339: Official
340: Assistant
341: Interested party
342: Attorney
343: Plaintiff defendant
344: Human
345: Messenger detective
346: Messenger
347: Detective
348: Ownership related
349: Owner
350: Ownership related
351: Protagonist
352: Reading writing
353: Writer
354: Reader
355: Reviewer
356: Performer Audience
357: Performer
358: Audience
359: Player Referee
360: Player
361: Referee

362: Organization

363: Institution
364: Administrative
365: Judicial
366: Legislature
367: Public institution
368: Armed force team
369: Armed force
370: Team
371: International agency
372: Association Party and Group
373: Association
374: Enterprise
375: Association
376: Alliance
377: Body
378: Club
379: Party and group
380: Political party
381: Class
382: Faction
383: Group
384: Society
385: Country
386: Domain
387: Family

389: Facility

390: Public facility
391: Government Office
392: Administration office
393: Judicial office
394: Government offices
395: Service facility
396: Post office
397: Communication facility
398: Broadcasting station
399: Electrical facility
400: Water and sewer facility
401: Gas facility
402: Research institute observatory
403: Service facilities
404: Hospital
405: School
406: Cultural facility
407: Museum
408: Library
409: Theater
410: Public hall
411: Gymnasium
412: Cultural facilities
413: Getting on and off place
414: Station
415: Port
416: Airport
417: Lines of transport
418: Road
419: Railroad
420: Bridge
421: Tunnel
422: Area facility
423: Garden
424: Zoo Botanical garden
425: Recreational area
426: Stadium
427: Public facilities
428: Work place
429: Office
430: Store
431: Branch office
432: Market
433: Department store
434: Store
435: Restaurant
436: Barber bathhouse
437: Accommodation
438: Store
439: Factory
440: Laboratory

441: Studio
442: Mine
443: Farm
444: Work place
445: Residence facility
446: Palace
447: Residence facility
448: Military establishment
449: Fort
450: Camp
451: Military establishment
452: Religion facility
453: Shrine
454: Temple
455: Church
456: Graveyard
457: Facility

458: Region

459: Region range
460: Region human activity
461: Land
462: Realm
463: Territory
464: Administrative district
465: City
466: Village
467: Hometown

468: Nature

469: Topography
470: Terrain
471: Land
472: Mountain
473: Mountain main
474: Mountain part
475: Mountaintop
476: Mountain side
477: Base
478: Pass
479: Valley
480: Cliff
481: Cave
482: Level ground
483: Plain
484: Basin
485: Plateau
486: Island Cape
487: Island
488: Sandbank
489: Promontory Peninsula
490: Shore
491: Coast
492: River bank
493: Lakeshore
494: Embankment
495: River
496: River
497: Waterway
498: Waterfall
499: Lake Marsh
500: Lake
501: Swamp
502: Pond
503: Puddle
504: Spring Well
505: Spring
506: Well
507: Sea
508: Open sea
509: Inland sea
510: Scenery
511: Physiographic
512: Physiographic natural
513: Forest
514: Grassland
515: Uncultivated land
516: Physiographic artificial
517: Arable land Ranch
518: Rice field
519: Field
520: Ranch
521: Forested land
522: Vacant land
523: Site
524: Physiographic artificial
525: Scene
526: Space
527: Celestial
528: Terrestrial
529: Moon celestial body
530: Solar
531: Star
532: Sky

534: Animate

535: Animal
536: Animal Individual
537: Animal
538: Bird
539: Reptile Amphibian
540: Reptile
541: Amphibian
542: Fish and Shellfish
543: Fish
544: Fish and Shellfish
545: Shellfish
546: Crab Octopus Prawn
547: Sea urchin Jellyfish
548: Insect
549: Insect
550: Insect
551: Animal Individual
552: Animal Part
553: Head
554: Head
555: Face
556: Facial
557: Forehead
558: Cheek
559: Chin
560: Eye
561: Eye Main
562: Eye Part
563: Nose
564: Nose Main
565: Nose Part
566: Mouth
567: Mouth Main
568: Lip
569: Tongue
570: Beak
571: Ear
572: Ear Main
573: Ear Part
574: Neck
575: Throat
576: Nape
577: Body
578: Chest
579: Stomach
580: Waist
581: Shoulder
582: Back
583: Side
584: Rear end
585: Tail
586: Bodies
587: Breast
588: Navel
589: Genital
590: Hand Foot
591: Hand Upper limb
592: Arm
593: Elbow
594: Hand
595: Wrist
596: Palm
597: Back of hand
598: Finger
599: Leg Lower limb
600: Hip Thigh
601: Knee
602: Leg Shin
603: Foot
604: Ankle
605: Sole
606: Top of foot
607: Toe
608: Finger
609: Joint
610: Wing Fin Webbed
611: Wing
612: Fin
613: Webbed etc
614: Internal organ Membrane Muscle
615: Internal organ
616: Respiratory organ
617: Digestive organ
618: Circulatory organ
619: Urinary organ
620: Genital organ
621: Nervous system
622: Gland
623: Membrane
624: Muscle
625: Skin hair
626: Skin
627: Skin

628: Mole Wart
629: Shell
630: Shell
631: Shell
632: Scale
633: Hair
634: Hair
635: Eyebrow Eyelash
636: Facial hair
637: Body hair
638: Feather
639: Bone tooth nail etc
640: Bone
641: Tooth Gum
642: Tooth
643: Tooth Gum
644: Nail Horn Fang
645: Nail
646: Horn
647: Fang
648: Blood secretion excreta
649: Blood
650: Secretion
651: Sweat
652: Tear
653: Milk
654: Digestive juice Hormone
655: Digestive juice
656: Hormone
657: Gonad liquid
658: Secretion misc
659: Nasal mucus
660: Saliva
661: Eye discharge
662: Pus
663: Dandruff
664: Excreta
665: Excretory thing
666: Feces
667: Urine
668: Fart
669: Vomit
670: Egg
671: Plant
672: Plant Individual
673: Tree and Shrub
674: Fruit tree
675: Tree and Shrub
676: Grass
677: Crop
678: Flowering plant Fieldgrass
679: Water plant
680: Plant Individual
681: Moss Fern
682: Fungus
683: Mold
684: Mushroom
685: Bacteria
686: Plant Part
687: Sprout Seedling
688: Sprout
689: Seedling
690: Root
691: Stalk Stump
692: Stalk
693: Stump
694: Branch leaf
695: Branch
696: Leaf
697: Flower
698: Flower Main
699: Flower Part
700: Fruit Seed ear
701: Fruit
702: Seed
703: Ear
704: Bark Fruit peeling
705: Cell

706: Inanimate

707: Natural thing
708: Matter Part
709: Component
710: Element
711: Atom
712: Matter Main
713: Solid
714: Metal
715: Precious metal
716: Base metal
717: Iron
718: Base metal
719: Acid Alkaline Salt
720: Acid solid
721: Alkaline
722: Salt
723: Mineral
724: Ore
725: Jewel
726: Coal
727: Rock
728: Stone Sand
729: Stone
730: Sand
731: Earth
732: High molecular compound
733: Nutrient
734: Cellulose
735: High molecular compound
736: Dust
737: Dust
738: Smoke
739: Ash
740: Rust
741: Dreg
742: Dirt
743: Poison
744: Ice
745: Solid matter
746: Liquid
747: Water Bubble
748: Water
749: Hot water
750: Waterdrop
751: Bubble
752: Acid liquid
753: Petroleum
754: Mercury
755: Liquid
756: Vapour
757: Air
758: Vapour
759: Vapour
760: Artificial thing
761: Goods
762: Personal effect
763: Commodity
764: Gift
765: Offering
766: Treasure
767: Product
768: Cargo
769: Material
770: Paper
771: Wood
772: Timber
773: Plank
774: Stone
775: Stone
776: Cement
777: Glass
778: Ceramic ware
779: Metal Foil
780: Metal
781: Foil Leaf
782: Fiber Leather
783: Fiber
784: Leather
785: Plastics
786: Plastic
787: Rubber
788: Plastics
789: Oil
790: Oil and Fat
791: Mineral oils
792: Fuel Fertilizer Fodder
793: Fuel
794: Solid fuel
795: Liquid fuel
796: Gaseous fuel
797: Fertilizer
798: Fodder
799: Rubbish
800: Chemical
801: Chemical medical
802: Chemical non medical
803: Agricultural chemical
804: Cosmetics
805: Cosmetics
806: Soap
807: Toothpaste
808: Perfume
809: Paint
810: Dye
811: Adhesive
812: Gun powder
813: Clothing
814: Thread Cloth
815: Thread

816: Cloth
817: Clothing
818: Clothing Main
819: Clothing Main upper body
820: Clothing Main lower body
821: Clothing part
822: Clothing attachment
823: Clothing accessory
824: Glove
825: Sock
826: Band
827: Scarf
828: Necktie
829: Headband
830: Mask
831: Clothing accessory
832: Hat
833: Footwear
834: Ornament
835: Rainwear Bedcloth
836: Rainwear
837: Bedcloth
838: Food
839: Foodstuff
840: Grain
841: Vegetable
842: Fish
843: Meat Egg
844: Dried fish Pickle
845: Tofu Agar
846: Seasoning
847: Cooked Food
848: Rice
849: Noodle
850: Bread
851: Soup
852: Cooked Food
853: Snackfood
854: Fruit
855: Confectionary
856: Beverage Tobacco
857: Beverage
858: Tea
859: Coffee juice
860: Milk
861: Liquor
862: Tobacco
863: Building
864: House
865: House Main
866: House Part
867: House Part place
868: Room
869: Corridor
870: Stairway
871: Veranda
872: Balcony
873: House part place addition
874: Houses part element
875: Roof
876: Ceiling
877: Pillars beam
878: Wall
879: Window
880: Floor
881: Base
882: Houses part element
883: House Attachment
884: Fitting
885: Curtain
886: Sunshade
887: Rug
888: Shelf Stand Platform
889: Garden
890: Gate Fence
891: Gate
892: Fence
893: Tool
894: Household effects Light
895: Furniture
896: Desk
897: Chair
898: Rack
899: Cupboard
900: Cooking stove
901: Air-conditioner
902: Furniture
903: Light
904: Container
905: Bottle Pot Tray
906: Bucket Can Barrel
907: Box
908: Sack
909: Basket Straw bag
910: Table ware
911: Bowl Cup Plate
912: Pot Kettle
913: Chopstick spoon
914: Tableware
915: Home equipment
916: Stationery Toy
917: Stationery
918: Document Publication
919: Document
920: Publication
921: Sports equipment
922: Instrument sound producing
923: Musical instrument
924: Bell Whistle
925: Marker Symbol
926: Sign
927: Badge
928: Monument
929: Flag
930: Token Ticket
931: Token
932: Ticket
933: Lottery
934: Money
935: Seal
936: Pointer
937: Ornament
938: Image Book Picture
939: Ornament
940: Job tool
941: Job tool use
942: Tool
943: Edged tool
944: Farming tool Harness
945: Farming tool
946: Harness
947: Fishing Hunting tool
948: Job tool action
949: Job tool opening and closing
950: Job tool join
951: Job tool action
952: Job tool form
953: Wheel
954: Car
955: Rod
956: Tube framework
957: Wire
958: Rope chain
959: Net
960: Job tool form
961: Weapon
962: Machine
963: Machine general
964: Motor
965: Job machine
966: Transmission machine
967: Machine part
968: Electrical machine
969: Electrical equipment
970: Communication equipment
971: Computer
972: Applied electronic equipment
973: Electric parts
974: Optical instrument
975: Camera
976: Telescope Magnifier
977: Eyeglasses
978: Optical part
979: Mirror
980: Lense
981: Optical part
982: Meter
983: Meter degree speed
984: Clock
985: Meter weight and measure
986: Vehicle
987: Vehicle Main
988: Vehicle Main Land
989: Vehicle Main Water
990: Vehicle Main Air
991: Vehicle Part
992: Vehicle Part Land
993: Vehicle Part Water
994: Vehicle Part Air

1002: Mental state

1003: Intellectual product
1004: Studies Subject
1005: Study general
1006: Academic field Subject
1007: Knowledge Opinion
1008: Knowledge Intelligence
1009: Opinion
1010: Editorial

1011: Theory
1012: Theory
1013: Outlines detailed exposition
1014: Doctrine
1015: Thought
1016: Impression
1017: Idea
1018: Enlightenment
1019: Logic Meaning
1020: Logic
1021: Principle
1022: Affair
1023: Authenticity
1024: True
1025: False
1026: Substantial
1027: Conceptual
1028: Semantic
1029: Motive
1030: Main point
1031: Summary
1032: Theme
1033: Problem
1034: Secret principle
1035: Methodological
1036: Plan
1037: Artistic creation
1038: Literary creation
1039: Poetry
1040: Poem
1041: Japanese ode
1042: Haiku
1043: Narrative
1044: Novel
1045: Drama
1046: Historical record
1047: Physical creation
1048: Picture
1049: Sculpture
1050: Handicraft
1051: Calligraphy
1052: Photograph Portrait
1053: Creation Sound
1054: Music
1055: Musical composition
1056: Song
1057: Created
1058: Play
1059: Opera
1060: Dance
1061: Movie
1062: Language
1063: Language Content
1064: Speech
1065: Name
1066: Person name
1067: Title
1068: Name
1069: Number
1070: Talk Content
1071: Topic
1072: Episode
1073: Greeting
1074: Phrase
1075: Idiomatic phrase
1076: Proverb
1077: Joke
1078: Literary style
1079: Rhetoric
1080: Language Type
1081: Sentence Phrase Word
1082: Sentence
1083: Phrase
1084: Word
1085: Grammatical
1086: Phonological
1087: Phonetic
1088: Pronunciation
1089: Tone
1090: Kanji pronunciation
1091: Sign language
1092: Letter of Alphabet
1093: Alphabet type
1094: Font
1095: Calligraphic style
1096: Label
1097: Handwriting
1098: Brush stroke
1099: Mark Symbol
1100: Mark
1101: Mark type
1102: Coat of Arms
1103: Diagram Schema
1104: Diagram
1105: Figure
1106: Table
1107: Score
1108: Equation
1109: Document
1110: Article
1111: Article Main
1112: Article Part
1113: Document type
1114: Letter Mail
1115: Publication
1116: Information
1117: Newspaper
1118: Magazine
1119: Book content
1120: Catalog
1121: Calendar
1122: Ethic Religion
1123: Ethics
1124: Humane
1125: Righteous path
1126: Evil course
1127: Moral
1128: Virtue
1129: Vice
1130: Integrity
1131: Loyalty
1132: Fidelity Infidelity
1133: Fidelity
1134: Infidelity
1135: Treachery
1136: Debt of Favour
1137: Trust unfaithful
1138: Trust
1139: Unfaithful
1140: Good and Evil
1141: Good
1142: Evil
1143: Sin
1144: Religion
1145: Tradition Information Reputation
1146: Tradition History
1147: Information News
1148: Reputation
1149: Rumor
1150: Popularity
1151: Fame Dishonour
1152: Fame
1153: Dishonour

1154: Action

1155: System
1156: Political system
1157: Government form State affairs
1158: Government form
1159: State affairs
1160: Military
1161: Law
1162: Regulation
1163: Legal
1164: Treaty
1165: Right Obligation
1166: Right
1167: Obligation
1168: Economic system
1169: Economy
1170: Public economy
1171: Household economy
1172: Income Expenditure
1173: Income
1174: Expenditure
1175: Supply Demand
1176: Demand
1177: Supply
1178: Profit Loss
1179: Profit
1180: Loss
1181: Share Debt
1182: Share
1183: Debt
1184: Price Cost
1185: Price
1186: Cost
1187: Capital Money
1188: Capital Fund
1189: Property Asset
1190: Money
1191: Stock
1192: Tax
1193: Wage Fee Interest
1194: Allowance
1195: Remuneration
1196: Annuity
1197: Compensation
1198: Interest

1199: Fee
1200: Security
1201: Quotation
1202: Social system
1203: Register
1204: Postal
1205: Social system
1206: Success Failure Performance
1207: Success Failure
1208: Success
1209: Failure
1210: Performance
1211: Result
1212: Merit Demerit
1213: Merit
1214: Demerit
1215: Manner Custom
1216: Custom Fad
1217: Custom
1218: Fad
1219: Habit
1220: Habit
1221: Convention
1222: Fashion
1223: Ceremony Event
1224: Ceremony
1225: Celebration
1226: Wedding
1227: Funeral
1228: Religious ceremonial
1229: Festival
1230: Event
1231: Gathering
1232: Gathering
1233: Exhibition Entertainment event
1234: Banquet

1236: Human activity

1237: Mind
1238: Spirit
1239: Sensation
1240: Feeling
1241: Perception
1242: Pain
1243: Madness
1244: Drunkenness
1245: Starvation Full
1246: Starvation Thirst
1247: Full
1248: Fatigue
1249: Sleep Awake
1250: Sleep
1251: Awake
1252: Dream
1253: Emotion
1254: Emotion
1255: Excitement Calm
1256: Excitement
1257: Calm
1258: Pleasure Suffering
1259: Suffering
1260: Pleasure
1261: Joy Sorrow
1262: Sorrow
1263: Joy
1264: Anger
1265: Surprise
1266: Fear
1267: Feeling towards self
1268: Relief Worry
1269: Relief
1270: Worry
1271: Satisfaction Dissatisfaction
1272: Satisfaction
1273: Dissatisfaction
1274: Repentance
1275: Introspection
1276: Fretfulness Relax
1277: Fretfulness
1278: Relax
1279: Confusion Composure
1280: Confusion
1281: Composure
1282: Self-respect Self-depreciation
1283: Pride Humility
1284: Pride
1285: Humility
1286: Self-confidence
1287: Self-confidence
1288: Self-abandonment
1289: Vanity
1290: Arrogance Modesty
1291: Arrogance
1292: Modesty
1293: Honour Shame
1294: Honour
1295: Shame
1296: Ego feeling
1297: Feeling towards others
1298: Empathy
1299: Like Dislike
1300: Like
1301: Dislike
1302: Love Hatred
1303: Love
1304: Hatred
1305: Degree of Intimacy
1306: Familiarity
1307: Alienation
1308: Good intention Malice
1309: Good intention
1310: Malice
1311: Sympathy Envy
1312: Sympathy
1313: Envy
1314: Gratitude Grudge
1315: Gratitude
1316: Grudge
1317: Respect Scorn
1318: Respect
1319: Scorn
1320: Regard Disregard
1321: Regard
1322: Value
1323: Disregard
1324: Appreciation bias
1325: Appreciation
1326: Bias
1327: Credence Discredit
1328: Credence
1329: Discredit
1330: Service Selfishness
1331: Loyalty Filial piety
1332: Chivalry
1333: Public spirit Selfishness
1334: Public spirit
1335: Selfishness
1336: Feeling towards others in additon
1337: Sentiment
1338: Impressed
1339: Praise
1340: Aspiration
1341: Sentiments
1342: Mood
1343: Expression
1344: Facial
1345: Look
1346: Cry
1347: Laugh
1348: Wonder
1349: Vocal
1350: Shiver
1351: Intention
1352: Will
1353: Determination Hesitation
1354: Determination
1355: Hesitation
1356: Desire Ego Selflessness
1357: Desires
1358: Ego Selflessness
1359: Ego
1360: Selflessness
1361: Wish Disappointment
1362: Request
1363: Wish
1364: Expectation
1365: Disappointment
1366: Roused Discouraged
1367: Spurt
1368: Courage
1369: Discouragement
1370: Tenacity Resignation
1371: Tenacity
1372: Enthusiasm
1373: Obstination
1374: Giving up
1375: Weariness
1376: Change of mind
1377: Diligence Indolence
1378: Diligence
1379: Effort
1380: Pain Hard work
1381: Indolence
1382: Fortitude
1383: Patience
1384: Endurance
1385: Attitude
1386: Religious faith
1387: Learning Memory

1388: Learning
1389: Practice
1390: Imitation
1391: Memory
1392: Memorised
1393: Forgetfulness
1394: Recollection
1395: Thinking
1396: Contemplation
1397: Belief Doubt
1398: Doubt
1399: Conviction
1400: Perplexity
1401: Attention Negligence
1402: Caution
1403: Negligence
1404: Concern
1405: Recognition Understanding
1406: Recognition
1407: Understanding
1408: Identification
1409: Comparison Collation
1410: Comparison
1411: Collation
1412: Identification Confusion
1413: Classification
1414: Distinction
1415: Confusion
1416: Selection Rejection
1417: Selection
1418: Approval Rejection
1419: Calculation Measurement
1420: Calculation
1421: Measurement
1422: Investigation Research
1423: Research
1424: Enquiry
1425: Academic investigation
1426: Experiment
1427: Search
1428: Investigation
1429: Investigation
1430: Changing
1431: Inspection
1432: Observation
1433: Guess
1434: Imaginations
1435: Guess
1436: Estimation
1437: Fortune-telling
1438: Judgement
1439: Judgements
1440: Conclusion
1441: Decision
1442: Decision
1443: Verdict
1444: Resolution
1445: Appraisal
1446: Solutions undecided
1447: Solutions
1448: Pendency
1449: Affirmation Denial
1450: Affirmation
1451: Denial
1452: Error correction
1453: Error
1454: Correction
1455: Proof Distortion
1456: Proof
1457: Distortion
1458: Preparation
1459: Plan
1460: Project plan
1461: Strategy
1462: Observation Reading Writing
1463: Observation
1464: Seeing
1465: Eye-witness
1466: Gaze
1467: First sight
1468: Glance
1469: Looking on
1470: Seeing direction
1471: Distant view
1472: Viewing
1473: Overlook
1474: Appearing and disappearing
1475: Patrol
1476: Vigilance
1477: Suggestion
1478: Revelation
1479: Explicit or Hint
1480: Notice
1481: Designated
1482: Enumeration
1483: Hearing
1484: Reading writing
1485: Reading
1486: Writing
1487: Writing general
1488: Authoring
1489: Mention in writing
1490: Record activity
1491: Inscribing ownership
1492: Signature
1493: Seal
1494: Drawing
1495: Speech and Conduct
1496: Statement
1497: Expressions
1498: Call by name
1499: Expression
1500: Description
1501: Translation
1502: Utterance Silence
1503: Speech
1504: Silence
1505: Signal
1506: Talk
1507: Conversation
1508: Dialogue
1509: Lecture
1510: Question Answer
1511: Question
1512: Answer
1513: Consultation
1514: Discussion
1515: Meeting
1516: Proposition
1517: Argument Quarrel
1518: Argument
1519: Quarrel
1520: Criticism Defense
1521: Criticism
1522: Blame
1523: Defense
1524: Speech
1525: Address
1526: Advocacy
1527: Exposition
1528: Explanation
1529: Annotation
1530: Reports advice
1531: Report
1532: Declaration
1533: Advice
1534: Advice
1535: Pronouncement
1536: Confession
1537: Appeal
1538: Testimony
1539: Contribution article
1540: Reporting
1541: Announcements declaration
1542: Announcement
1543: Declaration
1544: Communication correspondence
1545: Communication
1546: Correspondence
1547: Telegraphic
1548: Telephone
1549: Transmissions information
1550: Transmission
1551: Notification
1552: Broadcast
1553: Creation
1554: Invention
1555: Creation Language
1556: Lierary writing
1557: Creation form
1558: Creation sound
1559: Creation
1560: Conduct
1561: Physical movement
1562: Whole body
1563: Gesture
1564: Sexual act
1565: Sitting Standing
1566: Carrying
1567: Standing
1568: Sit
1569: Looking up down
1570: Looking up
1571: Looking down
1572: Lying down
1573: Crouching
1574: Crawling
1575: Foot movement
1576: Walking

1577: Running
1578: Foot movement
1579: Hand movement
1580: Mouth movement
1581: Daily living
1582: Clothing
1583: Dressing up
1584: Change
1585: Undressing
1586: Wear accessory
1587: Food
1588: Eating and drinking
1589: Drinking
1590: Eating
1591: Meal
1592: Dwelling
1593: Residence
1594: Being at home
1595: Lodging
1596: Confinement
1597: Absent
1598: Moving
1599: Wandering
1600: Sleeping Waking
1601: Going to bed
1602: Rising
1603: Sleepless vigil
1604: Health Hygiene Beauty care
1605: Health
1606: Rest
1607: Leisure
1608: Hygiene Beauty care
1609: Make-up
1610: Haircut
1611: Bath
1612: Face washing
1613: Life
1614: Conduct
1615: Register Deregister
1616: Register
1617: Deregister
1618: Inheritance Branch family
1619: Inheritance
1620: Branch Extinct family
1621: Retirement Comeback
1622: Retirement
1623: Comeback
1624: Eminence Downfall
1625: Eminence
1626: Downfall
1627: Career Move
1628: Assumption of office
1629: Being in office
1630: Change of post
1631: Retirement
1632: Job hunting
1633: Academic Military
1634: Academic
1635: Entrance
1636: Attending
1637: Change of schools
1638: Graduation
1639: Taking an examination
1640: Pass Fail in exam
1641: Pass
1642: Fail
1643: Military
1644: Enlistment
1645: Discharge
1646: Celebration Funeral
1647: Celebration
1648: Funeral
1649: Mourning
1650: Marriage Divorce
1651: Marriage
1652: Divorce
1653: Religious act
1654: Worship
1655: Worship
1656: Prayer
1657: Leisure
1658: Travelling sightseeing
1659: Travelling
1660: Touring
1661: Outing
1662: Strolling Long ride
1663: Strolling
1664: Long ride
1665: Enjoying coolness
1666: Hunting
1667: Fishing
1668: Hunting
1669: Sight-seeing
1670: Performance
1671: Show
1672: Stunt
1673: Singing
1674: Musical performance
1675: Dance Play
1676: Martial arts
1677: Play game
1678: Play
1679: Game
1680: Sport
1681: Social Acquiantance
1682: Social life
1683: Acquaintance
1684: Friendship
1685: Reconciliation
1686: Breaking off relation
1687: Assembly
1688: Opening Adjournment of meeting
1689: Opening of meeting
1690: Adjournment of meeting
1691: Presence Absence
1692: Presence
1693: Absence
1694: Encounter Separation
1695: Interview
1696: Separation
1697: Refusing audience
1698: Visit Leaving
1699: Visit
1700: Taking leave
1701: Summons
1702: Invitation
1703: Guide
1704: Lure
1705: Reception
1706: Welcome and Send off
1707: Welcome
1708: Send-off
1709: Mediation
1710: Introduction
1711: Arbitration alienation
1712: Arbitration
1713: Alienation
1714: Salutation
1715: Negotiation Promise
1716: Promise
1717: Contract
1718: Guarantee
1719: Cancellation
1720: Negotiation
1721: Business meeting
1722: Proposal Withdrawal
1723: Proposal
1724: Withdrawal
1725: Request
1726: Persuasion
1727: For and against
1728: For and against
1729: Approval
1730: Opposition
1731: Consent Refusal
1732: Consent
1733: Refusals
1734: Permission Prohibition
1735: Permission
1736: Prohibition
1737: Confirmation Denial
1738: Confirmation
1739: Denial
1740: Cooperation
1741: Compromise
1742: Flattery
1743: Collaboration Participation
1744: Cooperation
1745: Joining Withdrawing
1746: Joining
1747: Withdrawing
1748: Service
1749: Contribution
1750: Loyal
1751: Filial piety
1752: Conflict
1753: Fight
1754: Dispute
1755: War
1756: Competition
1757: Victory Defeat
1758: Victory
1759: Draw
1760: Defeat
1761: Attack Defense
1762: Attack
1763: Defense
1764: Punitive Defense
1765: Raising army

1766: Invasion
1767: Defense
1768: Conquest Surrender
1769: Conquest
1770: Surrender
1771: Resistance Obedience
1772: Resistance
1773: Obedience
1774: Vengeance
1775: Infringement Prevention
1776: Infringement
1777: Prevention
1778: Control
1779: Management
1780: Rule
1781: Administration of justice
1782: Lawsuit Trial
1783: Lawsuit
1784: Trial
1785: Punishment
1786: Public safety
1787: Arrest
1788: Detention
1789: Release
1790: Establishment Operation
1791: Establishment
1792: Operation
1793: Affairs
1794: Appointment and dismissal
1795: Appointment
1796: Dismissal
1797: Impeachment
1798: Dispatch
1799: Recruitment Employment
1800: Recruitment
1801: Employment
1802: Recommendation
1803: Nomination
1804: Election
1805: Induction
1806: Guidance
1807: Guidance
1808: Education
1809: Civilization
1810: Instruction
1811: Admonition
1812: Training
1813: Rescue Aid
1814: Rescue
1815: Assistance
1816: Help
1817: Protection
1818: Grace
1819: Care
1820: Request
1821: Request
1822: Urge
1823: Recruitment
1824: Order
1825: Restriction
1826: Regulation
1827: Intervention
1828: Non restriction
1829: Noninterference
1830: Liberation
1831: Exemption
1832: Encouragement
1833: Inducement
1834: Lure Charm
1835: Encouragement
1836: Instigation
1837: Observance Violation
1838: Observance
1839: Violation
1840: Obstruction Surmount
1841: Obstruction
1842: Surmount
1843: Treatment
1844: Treatment
1845: Favorable treatment
1846: Cold treatment
1847: Discrimination
1848: Persecution
1849: Recognition
1850: Expression of Gratitude
1851: Discourtesy
1852: Requital of favor
1853: Retaliation
1854: Apology
1855: Expression of gratitude
1856: Reward Punishment
1857: Reward
1858: Punishment
1859: Praise Censure
1860: Praise
1861: Slander
1862: Ridicule
1863: Threaten
1864: Deception Conciliation
1865: Deception
1866: Conciliation
1867: Transaction
1868: Acquisition
1869: Possession Store
1870: Possession
1871: Retention
1872: Storage
1873: Hand-carry
1874: Money received Payment
1875: Money received
1876: Payment
1877: Investment Consumption
1878: Investment
1879: Consumption
1880: Economising
1881: Extravagance
1882: Replenishment
1883: Collection Payment
1884: Collection
1885: Payment
1886: Price hike Price cut
1887: Price hike
1888: Price cut
1889: Loss Gain
1890: Gain
1891: Loss
1892: Trade
1893: Business transaction
1894: Import and export
1895: Accepting order Placing order
1896: Accepting order
1897: Placing order
1898: Exchange
1899: Sales Purchase
1900: Sales
1901: Purchase
1902: Giving Receipt
1903: Giving
1904: Transfer
1905: Presentation gift
1906: Conferment
1907: Receipt
1908: Loan Deposit
1909: Loan
1910: Lending
1911: Borrowing
1912: Deposit
1913: Deposit
1914: Return
1915: Recompense
1916: Collection Delivery
1917: Collection
1918: Distribution
1919: Delivery
1920: Toil
1921: Open Suspension of Business
1922: Labor Vain effort
1923: Labor
1924: In charge
1925: Vain effort
1926: Being employed
1927: Going to work
1928: Duty
1929: On duty
1930: Suspension of business
1931: Rest
1932: Holiday
1933: Absence
1934: Leaving early
1935: Strike
1936: Work
1937: Affairs
1938: Task
1939: Occupation
1940: Industry
1941: Business
1942: Manufacture
1943: Operation
1944: Production
1945: Construction
1946: Handicraft
1947: Repair
1948: Decorative
1949: Manufacture process
1950: Painting
1951: Polishing
1952: Carving
1953: Stretching
1954: Roasting

1955: Shaving
1956: Manufacture process
1957: Industrial
1958: Agriculture Forestry
1959: Agricultural
1960: Cultivation
1961: Farming
1962: Forestry
1963: Reforestation
1964: Lumbering
1965: Breeding Harvesting
1966: Breeding
1967: Stock-farming
1968: Cultivation
1969: Hunting
1970: Hunting
1971: Fishing
1972: Harvesting
1973: Mining
1974: Harvesting
1975: Manufacturing industry
1976: Printing bookbinding
1977: Printing
1978: Bookbinding
1979: Civil engineering
1980: Construction
1981: Transport
1982: Traffic
1983: Conveyance
1984: Cargo handling
1985: Medical care
1986: Publication entertainment
1987: Publications
1988: Editing
1989: Publication
1990: Issue
1991: Entertainments
1992: Entertainment
1993: Performance
1994: Exhibitions
1995: Housekeeping
1996: Needlework
1997: Laundry
1998: Cooking
1999: Cleaning
2000: Housekeeping
2001: Operation
2002: Manipulation
2003: Control
2004: Manipulation
2005: Use
2006: Treatment
2007: Installation
2008: Packing Stuffing
2009: Packing
2010: Wrapping
2011: Stuffing
2012: Pushing pulling supporting
2013: Pushing
2014: Pulling
2015: Supporting
2016: Piercing perforation
2017: Piercing
2018: Perforation
2019: Striking throwing shooting
2020: Striking
2021: Throwing
2022: Shooting
2023: Charging Recording
2024: Fire fighting
2025: Charging electricity
2026: Sound recording
2027: Photography
2028: Charging Recording
2029: Action
2030: Conduct
2031: Activity
2032: Deed
2033: Good deed
2034: Evil deed
2035: Killing
2036: Murder
2037: Suicide
2038: Assault
2039: Stealing
2040: Fraud
2041: Adultery
2042: Depravity
2043: Evil deed
2044: Deed
2045: Crime Disturbance
2046: Crime
2047: Criminal act
2048: Crime Guilt
2049: Disturbance
2050: Execution
2051: Enforcement
2052: Carried out
2053: Taking place

2054: Phenomenon

2055: Happening
2056: Misfortune
2057: Disaster
2058: Damage
2059: Incident
2060: Fire
2061: Calamity
2062: Panic
2063: Happening
2064: Change
2065: Origin Demise
2066: Origin
2067: Appearance
2068: Occurrence
2069: Ascendancy
2070: Revival
2071: Omen
2072: Exposure
2073: Disclosure
2074: Establishment
2075: Completion
2076: Demise
2077: Hiding
2078: Disappearence
2079: Downfall
2080: Cover
2081: Concealment
2082: Failure
2083: Abolition
2084: Abandonment
2085: Removal
2086: Adjustment
2087: Action
2088: Change Stability
2089: Change
2090: Stability
2091: Conversion
2092: Exchange
2093: Reformation
2094: Reform
2095: Restoration
2096: Correction
2097: Substitution
2098: Start End
2099: Start
2100: End
2101: Suspension
2102: Intermittence
2103: Consecutive
2104: Extinction
2105: Continuation
2106: Repetition
2107: Lapse of time
2108: Movement
2109: Dynamic
2110: Motion
2111: Vibration
2112: Floating
2113: Flutter
2114: Rotation
2115: Shaking
2116: Bounce
2117: Standing
2118: Sitting
2119: Invert Fall
2120: Slanting
2121: Walking
2122: Motion
2123: Static
2124: Standstill
2125: Fixed
2126: Stop
2127: Stagnation
2128: Process
2129: Migration Arrival Departure
2130: Migration
2131: Arrival Departure
2132: Departure
2133: Arrival
2134: Transit
2135: Advance
2136: Land Sea Air travel
2137: Land travel
2138: Sea travel
2139: Air travel
2140: Direction Tendency
2141: Encircling Wandering
2142: Encircling

2143: Wandering
2144: Flow Slide Flight
2145: Flow
2146: Slide
2147: Flight
2148: Passthrough Cutoff
2149: Pass through
2150: Penetration
2151: Conduction
2152: Circulation
2153: Cutoff
2154: Propulsion Guidance Escape Chase
2155: Preceding Following
2156: Preceding
2157: Following
2158: Propulsion
2159: Escape Chase
2160: Escape
2161: Evasion
2162: Chase
2163: Advance Retreat
2164: Advance
2165: Retreat
2166: U turn
2167: Retrace
2168: Abreast
2169: Crossing over
2170: Crossing water
2171: Crossing gap
2172: Coming Going
2173: Outgoing Returning
2174: Outgoing
2175: Returning
2176: Leaving Arriving
2177: Leaving
2178: Arriving
2179: Rise Descent
2180: Rise
2181: Descent
2182: Coming in out
2183: Exit Entry
2184: Exit
2185: Entry
2186: Putting out in
2187: Putting out
2188: Putting in
2189: Extraction Insertiong
2190: Extraction
2191: Insertion
2192: Absorption Leak
2193: Absorption
2194: Leak
2195: Pouring Drawing
2196: Pouring
2197: Drawing
2198: Opening Closing
2199: Opening
2200: Closing
2201: Burying Flooding
2202: Burying
2203: Flooding
2204: Encirclement Inclusion
2205: Encirclement
2206: Inclusion
2207: Rise Drop
2208: Ascent Descent
2209: Climbing Descent
2210: Climbing
2211: Descent
2212: Ascent Descent
2213: Rise
2214: Drop
2215: Falling Hanging down
2216: Falling
2217: Hanging down
2218: Lifting Lowering
2219: Lifting
2220: Lowering
2221: Mount Dismount
2222: Mount
2223: Dismount
2224: Floating Sinking
2225: Floating
2226: Sinking
2227: Seperation Combination
2228: Combination
2229: Union
2230: Concentration
2231: Accumulation Pile
2232: Accumulation
2233: Pile
2234: Unification
2235: Combination
2236: Mixture
2237: Blending
2238: Connection
2239: Adhesion
2240: Contact Approach Collision
2241: Contact Approach
2242: Collision
2243: Separation
2244: Detachment
2245: Dispersion
2246: Erosion
2247: Disassembly
2248: Fray
2249: Severance
2250: Flaking
2251: Deformation
2252: Destruction
2253: Bending
2254: Folding
2255: Folding
2256: Turn inside out
2257: Undulation
2258: Bulge
2259: Indent
2260: Arrangement
2261: Deformation
2262: Increase Decrease
2263: Increase Decrease
2264: Increase Decrease
2265: Increase
2266: Decrease
2267: Excess Shortage
2268: Excesses
2269: Shortage
2270: Sufficiency
2271: Sufficiency
2272: Insufficiency
2273: Addition
2274: Replenishment
2275: Increase Decrease
2276: Expansion Contraction
2277: Stretch Contraction
2278: Stretch
2279: Shrinkage
2280: Enlargement Reduction
2281: Enlargement
2282: Reduction
2283: Expansion Contraction
2284: Expansion
2285: Contraction
2286: Lengthening Shortening
2287: Lengthening
2288: Shortening
2289: Postponement Advance
2290: Postponement
2291: Advance
2292: Concentration Dilution
2293: Concentration
2294: Dilution
2295: Inflation Devaluation
2296: Inflation
2297: Devaluation
2298: Vicissitudes
2299: Flourishing
2300: Deterioration
2301: Development Retrogression
2302: Development
2303: Retrogression

2304: Natural phenomenon

2305: Non life phenomenon
2306: Object
2307: Non stimulus
2308: Chemical phenomenon
2309: Reaction
2310: Fire
2311: Ignition
2312: Combustion
2313: Extinguishment
2314: Physical phenomenon
2315: Physical change
2316: State change
2317: Solidification
2318: Melting
2319: Evaporation
2320: Liquefaction
2321: Sublimation
2322: Emulsification
2323: Dryness Moisture
2324: Dryness
2325: Moisture
2326: Clarity
2327: Clear
2328: Milky
2329: Pollution
2330: Physical change

2331: Thermal
2332: Heat
2333: Cold
2334: Wave
2335: Electricity
2336: Force physics
2337: Stimulus
2338: Brightness
2339: Light
2340: Darkness
2341: Shadow
2342: Shade light
2343: Shade of colour
2344: Gloss
2345: Optical
2346: Light ray
2347: Light source
2348: Projection
2349: Luminescence
2350: Flickering
2351: Colour
2352: Colour tint
2353: Colour change
2354: Sound
2355: Smell
2356: Taste
2357: Feel of touch
2358: Meteoroogical Astronomical
2359: Meteorologiacal phenomenon
2360: Weather
2361: Temperature
2362: Cold
2363: Warmth
2364: Rain
2365: Snow
2366: Dew Frost
2367: Dew
2368: Frost
2369: Cloud
2370: Fog Haze
2371: Fog
2372: Haze
2373: Wind
2374: Wave
2375: Tide
2376: Natural disaster
2377: Thunder
2378: Wind damage Flood
2379: Drought Cold damage
2380: Earthquake
2381: Landslide Avalanche
2382: Eruption
2383: Natural disaster
2384: Astronomical phenomenon
2385: Life phenomenon
2386: Life Death
2387: Life
2388: Survival
2389: Living
2390: Birth Germination
2391: Birth
2392: Germination
2393: Growth
2394: Growth
2395: Luxuriant growth
2396: Bloom
2397: Bearing fruit
2398: Aging
2399: Aging animal
2400: Aging plant
2401: Rebirth
2402: Death
2403: Death animal
2404: Death plant
2405: Physiology
2406: Breathing
2407: Blood circulation Pulse
2408: Discharge
2409: Secretion
2410: Reproduction
2411: Fermentation
2412: Physiology
2413: Health Imperfection
2414: Health
2415: Imperfection
2416: Sickness
2417: Onset
2418: Recovery
2419: Disease type
2420: Physical disability
2421: Injury

2423: Existence

2424: Presence
2425: Positive
2426: Negative
2427: Distribution
2428: Intrinsic
2429: Remaining
2430: Conservation
2431: Stay

2432: Categorisation System

2433: Category
2434: Type
2435: Similar type
2436: Item
2437: Example
2438: Primary Secondary
2439: Primary
2440: Secondary
2441: Class
2442: System

2443: Relation

2444: Related
2445: Origin End
2446: Origin Source
2447: End
2448: Cause Effect
2449: Condition
2450: Cause
2451: Result
2452: Effect
2453: Influence
2454: Reason Purpose
2455: Reason
2456: Purpose
2457: Evidence
2458: Similarity
2459: Identical
2460: Similar
2461: Difference
2462: Conformance Nonconformance
2463: Conformance
2464: Nonconformance
2465: Correspondence
2466: Mutual
2467: Connection
2468: Correspondence
2469: Contrast
2470: Opposite
2471: Parallel
2472: Intersection
2473: Independency Dependency
2474: Independency
2475: Dependency
2476: Balance Imbalance
2477: Balance
2478: Imbalance
2479: Superiority Inferiority
2480: Superiority
2481: Equality
2482: Inferiority

2483: Characteristic

2484: Attribute
2485: Attribute Agent
2486: Personality
2487: Disposition
2488: Character
2489: Habit
2490: Attribute Thing
2491: Quality
2492: Physical property
2493: Advantage Disadvantage
2494: Advantage
2495: Disadvantage
2496: Essence
2497: Content
2498: Structure
2499: Power Ability
2500: Power Agent
2501: Force Charisma
2502: Ability
2503: Talent
2504: Culture Education
2505: Talent
2506: Arts

2507: State

2508: Aspectual
2509: Circumstance
2510: Actuality
2511: Circumstance
2512: Normality Abnormality
2513: Business condition
2514: Crop condition
2515: Fishing condition

2516: Situation
2517: World situtation
2518: Situation
2519: Safety
2520: Safe
2521: Dangerous
2522: Confusion
2523: Tension Relaxation
2524: Tension
2525: Relaxation
2526: Mood
2527: Trend
2528: Appearance
2529: Conditions
2530: Favorableness
2531: Unfavourableness
2532: Right Wrong
2533: Right
2534: Wrong
2535: Aspect
2536: Circumstance
2537: Standpoint
2538: Personal circumstance
2539: Personal status
2540: Personal background
2541: Personal history
2542: Nobility
2543: Nobility
2544: Lowliness
2545: Poverty Wealth
2546: Poverty
2547: Wealth
2548: Luck
2549: Good luck
2550: Bad luck
2551: Fortune
2552: Misfortune
2553: Good Fortune
2554: Peace Disturbance
2555: Peace
2556: Emergency
2557: Busyness Idleness
2558: Busyness
2559: Idleness
2560: Manner Appearance Figure
2561: Manner
2562: Appearance
2563: Figure

2564: Form

2565: Shape
2566: Point
2567: Line
2568: Angular
2569: Surface
2570: 2D shape
2571: Unevenness
2572: Wrinkle
2573: Crevice
2574: Hole
2575: Three dimensional
2576: 3D shape
2577: Lump
2578: Piece
2579: Grain
2580: Powder
2581: Bundle
2582: Line
2583: Frame
2584: Pattern

2585: Numerical

2586: Number
2587: Quantity
2588: Quantity Frequency
2589: Age
2590: Value Amount
2591: Weight and Measure
2592: Degree
2593: Speed
2594: Quantity
2595: Unit
2596: Calculated value
2597: Many Few
2598: Whole Part
2599: Whole
2600: Part
2601: Set
2602: Group
2603: Pair
2604: Single Multiple
2605: Single
2606: Multiple
2607: Extent Limit
2608: Extent
2609: Limit

2610: Location

2611: Position
2612: Seat
2613: Trace
2614: Range
2615: Spot
2616: Actual spot
2617: Approximate spot
2618: Boundary Joint
2619: Boundary
2620: Joint
2621: Inside Outside
2622: Inside
2623: Interior
2624: Depths
2625: Bottom
2626: Outside
2627: Opening
2628: Inner Outer surface
2629: Outer surface
2630: Reverse surface
2631: Shade surface
2632: Up Down
2633: Above Under
2634: Above
2635: In
2636: Under
2637: Upper Lower
2638: Upper
2639: Middle
2640: Lower
2641: Top
2642: Left Right
2643: Left
2644: Right
2645: Side
2646: In front Behind
2647: In front
2648: Behind
2649: Direction
2650: Direction
2651: Direction
2652: Compass point
2653: Centre Surrounding
2654: Centre
2655: Circumference
2656: End limit
2657: Corner
2658: Edge Tip
2659: Sharp tip
2660: Space between
2661: Distance
2662: Distance
2663: Proximity
2664: Adjoining
2665: Nearby
2666: Beside
2667: Edge
2668: Along
2669: Route

2670: Time

2671: Calendar day
2672: Season
2673: Spring
2674: Summer
2675: Fall
2676: Winter
2677: Seasonal term
2678: Date
2679: Year
2680: Month
2681: Week
2682: Day
2683: Day Night
2684: Morning
2685: Noon
2686: Evening
2687: Night
2688: Non calendar day
2689: Point in time
2690: Time
2691: Opportunity
2692: Moment hour
2693: Usual
2694: Period phase
2695: Activity
2696: Period Life
2697: Period History
2698: Present Past Future
2699: Present
2700: Past