



UNIVERSITY OF JOHANNESBURG

FACULTY OF SCIENCE

MOBILE PROGRAMMING	APK CAMPUS
IT00137	
EXAMINATION	
2014-11-17	

EXAMINERS

M Heydenrych

MODERATOR

Prof R van Olst (WITS)

TIME

120 Minutes

MARKS

100

Please read the following instructions carefully

1. Write clearly and legibly in the **answer books** provided.
2. The use of electronic calculators is not permitted
3. This paper consists of 4 pages

STUDENT #

STUDENTE #

SURNAME, INITIALS

VAN, VOORLETTERS

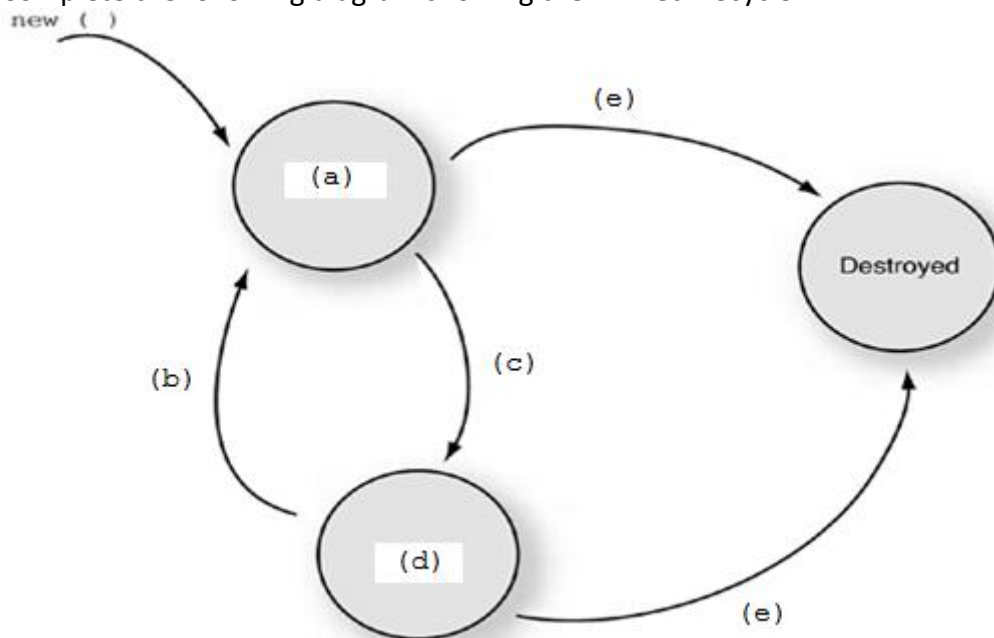
QUESTION 1

- 1.1 Give three reasons why flexibility is an important consideration when choosing a mobile programming platform. (3)
- 1.2 Give four advantages of Java for mobile devices. (4)
- 1.3 In the context of J2ME, compare and contrast **configurations** and **profiles**. (6)
- 1.4 Give two areas that are **not** handled by MIDP. (2)

[15]

QUESTION 2

- 2.1 What is the definition of a **MIDlet**? (1)
- 2.2 What are the five steps of the MIDlet build cycle? (5)
- 2.3 A MIDlet application descriptor has two compulsory elements. What are these two elements? (2)
- 2.4 Complete the following diagram showing the MIDlet lifecycle: (5)



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QUESTION 3

- 3.1 Name and describe the four Android building blocks. (8)
- 3.2 In Android, which class corresponds with the res directory? (1)
- 3.3 Name and describe the two ways in which user interfaces can be made in Android. (4)
- 3.4 An inexperienced colleague is producing an Android app with a user interface which is not expected to change often. Recommend one of the methods from Question 3.3 based on this information. Justify your recommendation. (2)
- 3.5 Name the two types of Intent. How may each of these be used? (4)
- 3.6 What must be done to every Activity to ensure correct execution? (1)

[20]

QUESTION 4

- 4.1 Distinguish between **menus** and **context menus** in Android (4)
- 4.2 In what three ways can colours be defined in Android? (3)
- 4.3 Assume the existence of a Paint object called *paint*. Provide Java code which will print "Hello, Android!" clockwise along a circle of radius 200. (5)
- 4.4 What common mistake is made when performing calculations based on the size of the screen in Android? How can this mistake be avoided? (3)

[15]

QUESTION 5

- 5.1 If trackball events are not handled, they will automatically be translated into key press events. Give two situations in which this behaviour would not be desired. (2)
- 5.2 Provide three pieces of advice for ensuring the efficiency of the `onDraw(...)` function. (3)
- 5.3 Complete the following code for capturing a touch event in Android: (6)

```
@Override
public boolean onTouchEvent((a) event) {
    //We only care about the down action
    if (event.(b) != MotionEvent.ACTION_DOWN)
        //Let our parent handle the event
        return (c);
    //Log the x and y positions
    Log.d(TAG, "onTouchEvent: x " + (d) + ", y " + (e));
    //Say that we have handled the event
    (f);
}
```

- 5.4 Provide Java code to play a video file called 'exam.mp4' in Android without using a MediaPlayer. (3)
- 5.5 How would you ensure that the above video plays in full screen? (1)

[15]

QUESTION 6

GeoSync© corporation has commissioned you to produce an Android application for their company. This application will be used for an international treasure hunt competition in which competitors use their phones in order to find famous landmarks. GeoSync© needs to store landmark locations in the following format: (DESCRIPTION, LATITUDE, LONGITUDE) where DESCRIPTION is a string and LATITUDE and LONGITUDE are floats.

- 6.1 In order to make a decision about storage, GeoSync© has asked you to provide a summary of storage. Name and discuss the three most common forms of storage used for persistent state in Android. (6)
- 6.2 Assume the existence of a `SQLiteOpenHelper` called `helper`, and appropriate constants named `DESCRIPTION`, `LATITUDE`, `LONGITUDE` and `TABLE_LANDMARK`. Insert the following data into a SQLite database using this `helper`: ("Greenwich", 0.0, 0.0) (5)

6.3 Name and discuss the two types of location sensing available. Based on your discussion, suggest which of these is more appropriate for the GeoSync© app. Fully justify your suggestion. (6)

6.4 Given that the distance between users and destinations may be very large, what formula would you calculate the distance between the user and the destination? (5)

[22]

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