Students Certification Management (SCM): Hyperledger Fabric-Based Digital Repository

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The higher education sector has been heavily impacted financially by the economic downturn caused by the pandemic that has resulted a decline in student enrollments. Finding cost-effective novel technology for storing and sharing student's credentials among academic institutions and potential employers is a demand. Within the current conventional approach, ensuring authentication of a candidate's credentials is costly and time-consuming which gives burdens to thousands of prospective students and potential employees. As a result, candidates fail to secure opportunities for either delay or non-submission of credentials all over the world. Blockchain technology has the potential for students' control over their credentials; degrees and transcripts for instance that will allow seamless streamlining of the sharing of educational records during changing and transferring schools, higher education, or even employment processes when need to show credentials. To implement the novel idea, we conduct a preliminary survey, study the existing applications, and investigate the feasibility of a Blockchain-based system to exploit the potential. Based on our findings, we propose a Students Certification Management System (SCM) by adopting Emerging Hyperledger Fabric that will offer a universal, tamper-evident, immutable, and secure educational certificate storing and sharing network. Our primary aim is to construct the proposed system into an educational certificate repository network using consortium blockchain for different entities including, (i) educational institutes to manage the network (ii) students and authorized third parties to access verifiable digital certificates and transcripts. Initially, we introduce an advanced architectural framework of the proposed system that has the potential in improving data flow between academic institutions, students, and potential employers. For ensuring transparency, each attempt in storing, sharing, and accessing credentials by the authenticated users within the proposed network shall be stored in the ledger which is secure and non-corruptible. Our future direction is

to implement the architectural framework into an educational certification repository network within a private blockchain network.