RMIT UNIVERSITY

IT Infrastructure and Security (COSC2737)

Industrial focused project

Option 1 Development of a web platform for alumni management, include:

1. Implement a front-end user interface (UI) for registration and login. (8 marks)
   a. A friendly user registration interface, to collect the username and password and store into the database (details in 2a).
   b. User login and identity authentication with the password used for registration provided in 1a.
   c. A link for external company/organisation to access.
2. Implement a role-based access to the back-end database. (6 marks)
   a. Keep the input of username and hashed password (collected in 1a) into the backend database of your choice, e.g, SQLite.
   b. Assume that the documents (transcript and graduation certificate) are already in the system, to implement
      - Registered users (alumni) can access and download his/her transcript and certificate anytime.
      - External users (company/organisation) can verify the genuineness of a certificate by input the unique number on the certificate.
3. Technical documentation includes: (18 marks)
   a. Showing the overall architecture about security protection for client side, server side and communication channel of a web platform.
   b. How a secure socket is established between a client and a server?
      - Showing how the external users' searching request is found and the result is returned to the requestor.
   c. How the Diffie-Hellman protocol produces the shared key between a client and a server, give the detailed steps.
   d. Using an example to show how a digital signature is used to guarantee the integrity of the returned document.
4. Start-up idea (5 marks)
   a. Explain what a distributed trust is.
   b. Give a proposal of tracking items with blockchain technology.

Option 2 Quick Response (QR) code for attendee tracking applications.

1. Create a QR code. (8 marks)
    a. Embed the URL http://titan.csit.rmit.edu.au/~e73581/itis/index.html to a QR code generator https://www.qrcode-monkey.com/ to create a QR code.
    b. Show how the HTML form is linked to the QR code.

       You are encouraged to implement the URL and add an item of "input mobile number", which can trade 1c.
    c. Use a diagram to show the searching function for retrieving the data (e.g., the study program) from the back-end server.

2. Design a one-page poster to promote (for selling) the app. You can design a vivid poster of your style, the content may include, but is not limited to: (6 marks)
    a. In what situation the QR code can be used?
    b. List the steps of generating a QR code.
    c. How the infomration is handled securely.

3. Write a technical document for hosting the app on Amazons Web Server (AWS). (18 marks)

    a. Showing the overall architecture for hosting the web page and database on AWS.
    b. How a virtual machine is established for maintaining the attendee tacking?
        - What technologies made the back-end database secure and reliable? Give details.

    c. How the Diffie-Hellman protocol produces the shared key between a client and a server, give the detailed steps.
    d. Using an example to show how a digital signature is used to guarantee the integrity of a document.

4. Start-up idea (5 marks)
    a. Explain what a distributed trust is.
    b. Give a proposal of tracking items with bockchain technology.