Computer Science Department

Operating Systems (CSI 354)

PROJECT 1

Due Date: 1st November, 2021, **1700Hours**

Instructions:

1. This is an individual assignment
2. Submit a detailed report of your answers (via Moodle link)
3. Reference your work (acknowledge all data sources)
4. **DO NOT COPY AND PASTE CONTENT FROM THE INTERNET**
5. Answer all questions.

Total marks: **90**

Check Moodle for the submission link and instructions.

Answer ALL Questions:

1. Operating Systems vary in terms of design and structure. Discuss any Three (3) Operating System structures of your choice, how they differ, applicable scenarios that best suite each of the designs and pros and cons of each. *[30 marks]*

2. Separation of policy and mechanism is a design principle to achieve flexibility. Discuss using examples, why and how this principle is achieved in Operating Systems. *[10 marks]*

3. We have stressed the need for an Operating System to make efficient use of the computing hardware. Why is it appropriate for the Operating System to abide by this principle and not "waste" resources? Why is it appropriate sometimes for the Operating System to forsake this principle and "waste" resources? *[10marks]*

4. Operating system design influences the design of application programs and similarly application programs design influence the design of Operating Systems. Discuss. *[20marks]*

5. Pick any One preferred Application Programming Interface (API), discuss its structure and how it is implemented to support system calls initiated by user Programs. *[10marks]*

6. In today's highly virtualized computer systems, security should always remain a top priority. Discuss any Three security issues associated with OS virtualization, and suggest any best practices for enhancing security in a virtualized environment. Outline any Two considerations while implementing a hypervisor. *[10marks]*

Please make sure to include references in all your research work. Since this is a project work, you are encouraged to go an extra mile in your answers, i.e. be detailed.

---THE END---