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| **Operating Systems Lab (CL2006)** |
| Date: 18/10/2024 |
| **Course Instructor(s)** |
| Mr. Muhammed Monis |

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| **Lab Mid Exam (B)** |
| **Total Time: 90 minutes** |
| **Total Marks: 25** |
| **Total Questions**: **03** |
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| **Semester:** FL-2024 |
| **Campus:** Karachi |
| **Dept:** Computer Science |

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***CLO # 1: Understand and Analyze Command Line tools for Linux OS and Shell scripts for system level programming to automate tasks such as file management, system backups and software installations.***

**Q1**. [7 marks]   
Create two shell script files File1.sh, File2.sh with the following properties

1. File1.sh, In this script, find all the .C files present in the directory.
2. Once all the files are detected compile them one by one and append their output in a text file.
3. Then launch File2.sh from this script
4. In File2.sh Create a new .C file which has an extension name for the files which are required to be copied.
5. In input for that .C file must be taken from the main arguments .
6. The code should copy the files to a different directory (create one).

Note: Create the C Files in the first place.

***CLO # 2: Understand how to configure and customize Linux Kernel for installations, applying patches and performance optimizations for system calls.***

**Q2**. [4+4.5 marks]

Implement the following tree. The catch is that the leave nodes have values, and the parent node values are missing. To get the parent node values both the values from the child nodes must be added to get the parent value. Subsequently you must repeat this until the value of the root node is achieved. Use an appropriate method to communicate some value.

A diagram of a diagram

Description automatically generated

***CLO # 3: Gain hands on experience in writing code that interacts with operating system services related process and files system, multi-thread programing and different synchronization primitives.***

**Q3** [4 + 6 marks]

Consider a scenario where there is a teacher and three students. The teacher would convey a message, and the students would receive the message from the teacher. Once received, each student will respond to the message according to their sequence (S1,S2,S3). The Teacher would then respond each student individually.

Teacher = Hello

S1= Received Hello ,S2= Received Hello ,S3= Received Hello

S1= World, Teacher = Received World

S2= Jello, Teacher = Received Jello

S3= OS, Teacher Received OS  
Teacher HELLO S1 , HELLO S2, HELLO S3,  
S1= Received HELLO S1, S2= Received HELLO S2, S3= Received HELLO S3

**Note:** You would require using 4 files to accomplish this task. Use the appropriate IPC Method.