**International Islamic University Chittagong (IIUC)**

**Department of Computer and Communication Engineering**

**Semester End Lab Examination**

Semester: **Autumn 2024**

Course Title: **Python Programming Sessional**

Time: **3 Hours**

Program: **B.sc (Engg.)**

Course Code: **CCE–2406**

Total Marks: **100**

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| (i) Answer all the questions. The figures in the right-hand margin indicate full marks.(ii) Course Learning Outcomes (COs) and Bloom’s Levels are mentioned in additional Columns. | | | | | | | |
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| **Course Learning Outcomes (CLOs) of the Questions** | | | | | | | |
| **CLO1** | Demonstrate foundational knowledge in Python programming, including basic syntax, data structures, and algorithms, to solve real-world problems. | | | | | | |
| **CLO2** | Utilize Python for advanced problem-solving through coding challenges and **competitive programming techniques**, emphasizing efficiency and optimization. | | | | | | |
| **CLO3** | Demonstrate proficiency in advanced Python applications, including **web development**, **image processing**, **machine learning**, **game development**, **natural language processing**, and **artificial intelligence**, through project-based learning. | | | | | | |
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| **Bloom’s Levels of the Questions** | | | | | | | |
| **Letter Symbols** | | **R** | **U** | **Ap** | **An** | **E** | **C** |
| **Meaning** | | Remember | Understand | Apply | Analyze | Evaluate | Create |

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| **1.** | **Abir** is **teaching** his little brother the names of the days of the week. Abir's little brother will ask him randomly by providing a number from **1 to 7**, and Abir will respond with the corresponding day of the week.  **1 = Saturday, 2 = Sunday, 3 = Monday, 4 = Tuesday 5 = Wednesday, 6 = Thursday, 7 = Friday.**  Now Write a Python program to help Abir by taking multiple inputs (queries) from his little brother and printing the corresponding days of the week. | **CLO2** | **Ap** | **10** |
| **2.** | **Input :**  **1** **( Test Case )**  **5** **( Size of the Pyramid )**   |  |  | | --- | --- | | **Output ( If the last digit of your id is Even ) :**  1  1 2  1 2 3  1 2 3 4  1 2 3 4 5 | **Output ( If the last digit of your id is Odd ) :**  1 2 3 4 5  1 2 3 4  1 2 3  1 2  1 | | **CLO1** | **Ap** | **10** |
| **3.** | Given an array: **A** = **[100, 20, 5, -4, 101, 45, 55, 0 , -1 , 0]**  Sort this array in ascending order using any **sorting algorithm**, such as **Selection Sort** , **Bubble Sort** etc. | **CLO1** | **Ap** | **10** |
| **4.** | Write a Python program to implement Any Searching Algorithms (**Binary Search, Linear Search etc. )**  for finding a target string in a sorted list of strings. Print "Found" and mention its position if the target string is found; otherwise, print "Not Found".  **Example :**  **s = ["apple", "banana", "cherry", "date", "fig", "grape", "kiwi"]** ,  **target string = "cherry"**  **Found , Position : 3** | **CLO1** | **Ap** | **10** |
| **5.** | The price of one burger at the "**Zero Point**" store in **IIUC** is **x taka**, but there is a **promotion** where you can buy two burgers for **y taka**. You want to buy exactly **n** burgers. For each test case, calculate the minimum amount of taka you need to spend to buy exactly n burgers.   |  |  | | --- | --- | | **Input :**  The first line contains a single integer the number of test cases. The first and only line of each test case contains three integers n , a , b .  4  2 5 9  3 5 9  3 5 11  4 5 11 | **Output (Minimum amount of taka you need to spend) :**  9  14  15  20 | | **CLO2** | **U,Ap** | **10** |
| **6.** | Design and develop a simple **portfolio website** using the **Flask framework in Python**. The website should display static data passed from the backend to the frontend.  Here’s a demo data you can use to populate the **portfolio website's** data:  **portfolio\_data** = {  "**name**": "**Engr Baizid MD Ashadzzaman**",  "**about**": "I am a software engineer specializing in **software development**, **ML, AI, CV**.",  "**projects**": [  {  "**title**": "**Virtual gym trainer**",  "**description**": " A Virtual Gym Trainer is an AI-driven app offering personalized workout  guidance and real-time feedback, ensuring proper form and effective fitness from home.”  "**link**": "**https://pose-estimate-specific-position-mediapipe-js.vercel.app**/"  },  ],  "**contact**": {  "**email**": "**baizid.md.ashadzzaman@gmail.com**","**phone**": "**8801862420119**"  }  } | **CLO3** | **Ap** | **10** |
| **7.** | |  |  | | --- | --- | | Develop a **Python** program using **Mediapipe** to detect **face landmarks**,  laying the foundation for a future thesis work on driver safety systems by analyze **eye aspect ratio (EAR)** to identify signs of **drowsiness**. | Close-up of a person's eye  Description automatically generated | |  |  | | **CLO3** | **Ap** | **10** |
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| **Q1.** | Choose and answer any **two question**s from **topics 1 to 6** listed in the provided **answer script**, ensuring your response is **detailed** and **relevant** to the **subject** **matter**. |  |  | **20** |
| **Q2.** | Implement **two questions** excluding the **ones you've previously** written. |  |  | **20** |
| **Q3.** | Quiz |  |  | **20** |
| **Q4.** | Project |  |  | **10** |
| **Q5.** | Viva |  |  | **10** |
| **Q6.** | Report |  |  | **10** |
| **Q7.** | Attendance |  |  | **10** |