**PLEASE READ AND FOLLOW THE INSTRUCTIONS CAREFULLY.**

1. The mini Project must be done in a **group**, with a **TWO** (minimum) or **FOUR** (maximum) students per group.
2. This mini Project contributes **20%** to your overall marks.
3. The source code of your mini Project **must** cover all the elements mentioned in the **rubric** below.
4. Read the task carefully and follow the rubric given to complete your project.
5. **Softcopy (Project Report & Presentation Slide) must be submitted through KALAM.**
6. You may conduct your group discussion through an online medium such as Google Meet, Zoom, Cisco Webex or any other suitable platforms.

**THE TASK.**

Each group need to propose a topic/title from real-world problem based on ministry department (No. 1 to No. 32) that can be access from http://www.kabinet.gov.my/bkpp/index.php/anggota-pentadbiran/menteri. Example, if your group plan to choose ministry department from finance (No. 4), therefore your project must relate to the finance such as banking system. Each group can’t have same topic and same ministry department. The proposal should consist of all the elements that have been covered in this course. The compulsory elements are **controlled statement, function, array and file processing**. Other elements such as **arithmetic statement and equation, I/O operation** normally embedded when the compulsory elements are applied. Below is the rubric of the mini-project for your reference. All groups need to submit their report and present their mini-project to your lecturer by **Week 14**.

**Compulsory items to be included in the mini-project:**

|  |  |  |
| --- | --- | --- |
| **No** | **Items** | **Description** |
| 1 | Arithmetic Operations | A proper calculation must be considered. Example: Calculate a total price, discount, tax etc |
| 2 | Control Statement | Implement a minimum of **3 decisions** for three different variables  Implement minimum **1 nested** decision in one of the decisions |
| 3 | Modular Programming | Minimum **4 functions** (excluded main function) |
| 4 | Pointer | Implement minimum **1 pointer** (passing value by reference) |
| 5 | File Operation | Implement a minimum of **1 read from file** and **1 write to file** |
| 6 | Array | Implement an **array** technique (string array is not counted) |

**REPORT PREPARATION:**

1. Maximum **3 pages** of the description on the case study. The description should include:
   1. Input
   2. Process
   3. Output (screenshot)
2. Coding
3. Please use the **template** provided in KALAM.

**Table 2: Rubric Evaluation for Mini Project**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CO** | **ELEMENT** |  | **Mark** | **Total Mark** |
| **CO1**  **(50m)** | **Flow Chart**  **(10m)** | Start and Stop [1M] |  |  |
| Input [1M] |  |
| Process [1M] |  |
| Output [1M] |  |
| Control Statement [1M] |  |
| Array [1M] |  |
| Function [1M] |  |
| File Processing [1M] |  |
| Logic Flow [1M] |  |
| Correct Symbols [1M] |  |
| **Overall Program Structure**  **(8m)** | Uses pre-processor directive [1M] |  |
| Main Function [1M] |  |
| Comment [1M] |  |
| Indentation [1M] |  |
| No syntax error [2M] |  |
| Statement follows sequence in flow chart [2M] |  |
| **Correct variable declaration (8m)** | Integer/float/double/string [4M] |  |
| Array [4M] |  |
| **Process**  **(16m)** | Correct all selection [6M] |  |
| Correct all loop [6M] |  |
| Correct all arithmetic expression [4M] |  |
| **File Operation**  **(15m)** | Correct file declaration [1M] |  |
| Correct open file syntax [1M] |  |
| Correct all read file syntax [6M] |  |
| **CO2**  **(25m)** | Correct all write file syntax [6M] |  |  |
| Correct close file syntax [1M] |  |
| **Use of Array**  **(12m)** | Correct all input data type in array [6M] |  |
| Correct all related process of array [6M] |  |
| **Pointer (3m)** | Correct pointer declaration [1M] |  |
| Correct use of pointer [2M] |  |
| **Output Statement (3m)** | Correct all output presentation [3M] |  |
| **CO3**  **(25m)** | **Background of project (10m)** | Acceptable background/clear problem [2M] |  |  |
| Project objective [2M] |  |
| Input / provide sample of input/screen shoot [2M] |  |
| Output / provide sample of output/screen shoot [2M] |  |
| References [2M] |  |
| **Additional function / features (10m)** | Add data [2.5M] |  |
| View data [2.5M] |  |
| Delete data [2.5M] |  |
| Update data [2.5M] |  |
| **Additional Library (5m)** | Implement additional library (other than stdio.h) [5M] |  |  |