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| Universiti Malaysia PAHANG | COURSE NAME: PROGRAMMING TECHNIQUE | | COURSE CODE BCS1023 | |
| | ASSESSMENT: HOT 2(15%) | | | |
| | LECTURER: | | | |
| | DATE & TIME : 28 May 2021 8.00 PM 10.00 PM | | | |
| STUDENT'S INFORMATION | | | | |
| NAME | | | | |
| STUDENT ID | | SECTION | | /90 |

## MARKING SCHEME/RUBRICS

| **CO1 Demonstrate various techniques in solving a problem (5%)** | | **Full Marks** | **Marks Given** |
|---|---|---|---|
| 1.1 Correct and relevant use of variables (input, process, and output) | | 3 | |
| 1.2 Correct and relevant use of variable of array (input, process, and output) | | 9 | |
| 1.3 Correct flow of control statements (selection) | | 3 | |
| 1.4 Correct flow of control statements (looping) | | 3 | |
| 1.5 Correct use of arithmetic equations | | 3 | |
| 1.6 Correct use of function elements (function declarations, function definitions, and calling functions) | | 9 | |
| **TOTAL CO1** | | **30** | |
| **CO2 Construct and runs programs (10%)** | | **Full Marks** | **Marks Given** |
| **Input** | | | |
| **2 Apply appropriate input using array variables and statement relevant to the problem** | 2.1 Initialization: Apply appropriate name and appropriate type of variables | 3 | |
| | 2.2 Input Format: Apply appropriate format for input data (scanf, gets, and etc) | 3 | |
| | 2.3 Input statements: Follow logical looping to enter input data *participant information* and *jumping information* | 6 | |
| **Process** | | | |
| **3 Process** | 3.1 Finding the longest jump (operation and control statement) | 5 | |
| | 3.2 Calculate average (operation and control statement) | 5 | |
| **4 The usage of modular programming in formulating the calculation or any related process.** | 4.1 Function #1. Find the longest jump: Appropriate declaration of function (function prototype), function definition, calling a function (passing parameter), return value. | 5 | |
| | 4.2 Function #2. Calculate the average of jumps: Appropriate declaration of function (function prototype), function definition, calling a function (passing parameter), return value. | 5 | |
| | 4.3 Function #3.Display: Appropriate declaration of function (function prototype), function definition, calling a function (passing parameter). | 4 | |
| **5. Usage of array** | 5.1 Declaration/usage of array | 2 | |
| | 5.2 Assign jump to array | 3 | |
| | 5.3 Array manipulation / Usage of array in function find longest jump and calculate average | 6 | |
| **Output** | | | |
| **6. Overall program structure** | 6.1 Able to display the correct *Participant Information* | 3 | |
| | 6.2 Able to display the correct *Jumping Information* | 3 | |
| | 6.3 Able to display the correct *longest* and *average* | 2 | |
| | 6.4 Error-free program | 5 | |
| **TOTAL CO2** | | **60** | |

**INSTRUCTIONS**

- This is an open-book test.
- This HOT will carry out **15%** of your final marks
- This test paper has 1 (ONE) question with four (4) pages.
- Answer this question completely by yourself. Discussion on answering this question is strictly prohibited. You are NOT allowed to discuss with your classmate or anyone else by using any tools to exchange or transfer the answer. Any attempt to do so will be considered cheating, resulting in you getting 0 marks attempt to do so will be considered as cheating, resulting in you to get 0 marks.
- Estimation time to complete the answer of this test is 2 Hours
- Full marks for this HOT is 90 marks.
- Your program must be running properly (free from syntax error, whether you are unable to answer all the questions).

**SUBMISSION**

i. Save your program as, for example, **HOT02_CA12345.c.** For those who do not have a laptop, write the code on paper, snap the clear picture of it.

ii. Send your .c file to Google Form into your respective section folder. Submission will be **closed by 11 PM on 28 May 2021**.

**ANY PLAGIARISM 50% DETECTED, ZERO (0) MARK WILL BE GIVEN**
**(Code similarity checker will be used)**

**QUESTION**

In a sports competition of long jumping at Sekolah Kebangsaan Pekan, each participant will be given 5 jump attempts. The longest attempt will be counted as a jump for each participant. In addition, the average reading of the jump is taken to see the consistency of the participants' jump.

Based on the given situation, develop a C program to display the information of participants with their jumping information.

Your program must comply with the following rules:

- The main function to enter the participant information with jumping information.
- A function to find the longest jump of the participant The process of finding the longest jump is done by comparing all the jumps among each other. This function will receive an array from the main function and then return the longest jump to the main function.
- A function to calculate the average of the jump. The calculation of finding the average is done in this function. This function will receive an array from the main function and return the longest jump to the main function.
- A function to display the result information. The function will receive the participant information, jumping information, the longest jump, and average from the function. No return value is required.

Your program must apply modular programming, control statement, and array techniques. You may apply other related techniques if necessary. You are not allowed to use the global variable in your program.

Figure 1 shows the sample output of the system.

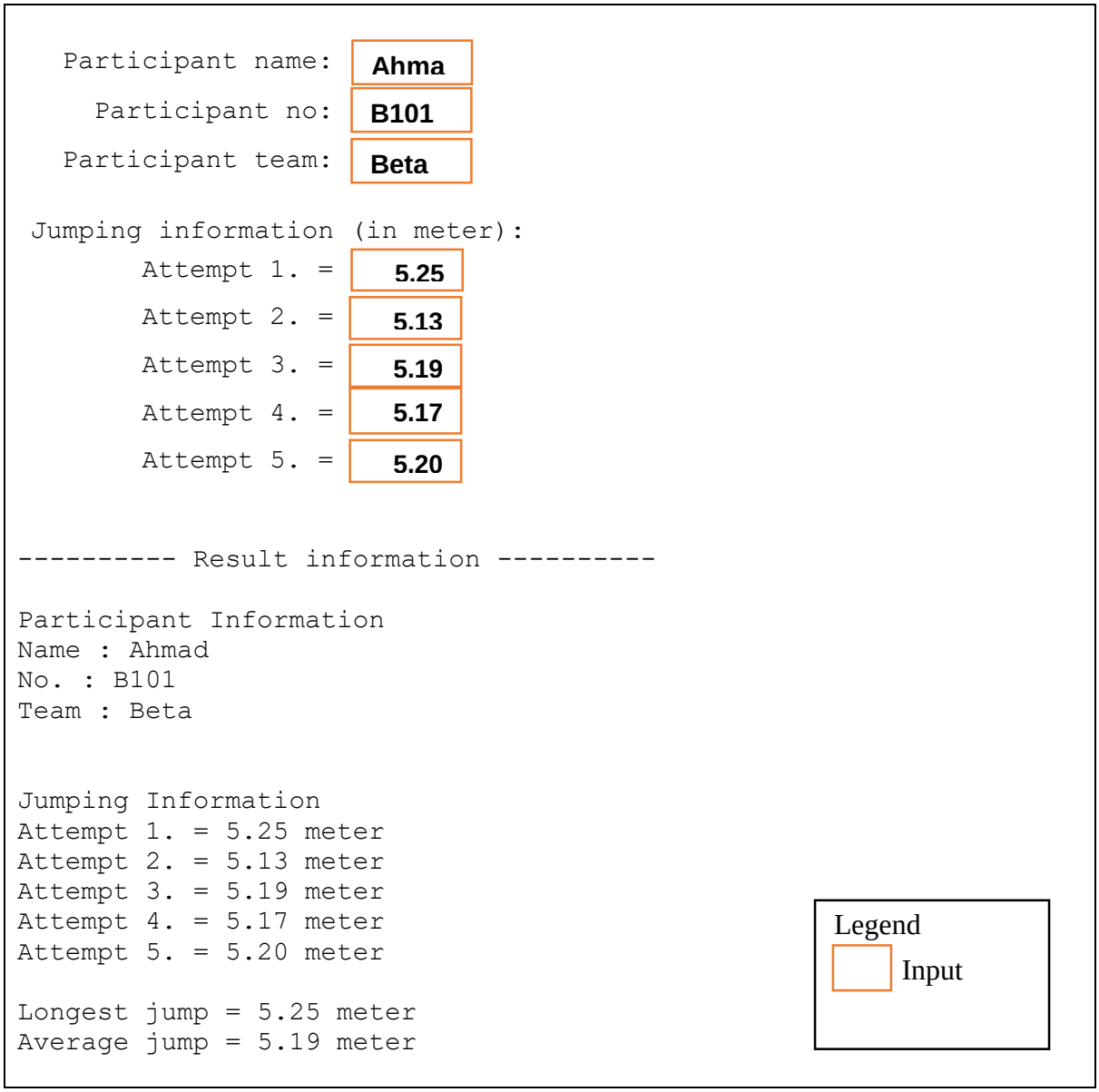


**Figure 1.** Sample of the Output

**PLEASE REFER TO THE MARKING SCHEME/RUBRICS AS A GUIDE IN COMPLETING THE SOLUTION**

**END OF QUESTION**