	FACULTY OF COMPUTING		MARKS:
	COURSE: SOFTWARE TESTING	**CODE:** BCS3233	**10%**
	TOPIC: Chapter 1,2,3,4,5,6		
UNIVERSITI MALAYSIA PAHANG AL-SULTAN ABDULLAH	**ASSESSMENT:** Assignment on Test Case Design	**NUM:** 1 **DURATION:** 8 weeks	

MATRIC NUM: _____   **IC NUM:** _____

General Instructions:

1. This task should be done **individually.**

2. This Assignment carries out **10%** of your assessment marks.

3. Please use the given cover page in **Appendix A** for each report submission. The cover page must be binding with your answer in PDF format.

4. Give your answer based on the total marks for each question. Provide detailed explanations, using examples, diagrams, or images, and complete essays with important keywords highlighted.

5. Any plagiarism and late submission will be penalized.

Course Outcome:

The Course Outcome (CO) for this assignment assessment is as follow:

CO1- Compare and classify between various levels of testing, test types and test approaches.

CO2- Organize and display the test activities throughout the software testing life cycle.

CO3- Work on the use of the test design techniques, risk analysis and reporting within the test process.

Mark Distribution Guideline:

DISTRIBUTION TASKS	MARKS	WEIGHT (IMS)	CO1	CO2	CO3	WEEK	CHAPTERS
ASSIGNMENT	100M	10%	0%	7%	3%	8	1,2,3,4,5,6
TOTAL	**100M**	**10%**	**0%**	**7%**	**3%**		

MATRIC NUM: _____   **IC NUM:** _____

Question 1

Consider the following C code excerpt.

```
    double ComputeControlledDistance (double voltage, double current,
                         double temperature,
                         boolean IsUp);
 {

   double distance = 0.0;
   if (((voltage>5.0) || (current< 1.0)) && ((temperature == 27.0) && (!IsUp)))
        {
            distance=DirectMeasure();
        }
   else
        {
            distance=ApproxMeasure();
        }
   return distance;
 }
```

Figure 1. C Code Excerpt

a) Using equivalence partitioning and boundary value analysis, generate suitable test cases to test *ComputeControlledDistance* function along with the suitable test oracle. Assume the min acceptable increment for voltage, current, and temperature is 0.01. [15 marks]

b) What are the possible exhaustive tests based on your results in (a)? [10 marks]

c) Using the Jenny tool, minimize the generated test in (a) with the interaction strength, t=2. [5 marks]

d) Derive the minimum set of test cases for all variables voltage, current, temperature and IsUp to achieve the Modified Condition/Decision Coverage. [15 marks]

e) Whenever possible, combine the test cases in (c) and (d). Reflect what types of defects can be detectable using the combined test cases. [15 marks]

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f) With your design tests, write a **test driver** in C or Java along with the **stubs to simulate the methods** *DirectMeasure()* **and** *ApproxMeasure()*. Assume *DirectMeasure()* will return a random double between 0 to 1.0 while *ApproxMeasure()* will return a random double from 1.0 to 10.0. Submit the develop driver and stubs along with the test case execution output and its test oracle outcomes. [20 marks]

[TOTAL Question 1: 80 marks]

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Question 2

Consider the following four (4) **if statements**.

```
if (A>10 || B>1)&&(C<5 && D>-1 && E==5)      if ((p>10 && q<50) && (r<5 && s==1))
{                                            {
/* instructions */                           /* instructions */
}                                            }
else                                         else
{                                            {
/* instructions */                           /* instructions */
}                                            }

if ((IsRight &&!IsLeft) && speed <=50)       if ((P>=50 && Q==100) || current<=1.0)
{                                            {
/* instructions */                           /* instructions */
}                                            }
else                                         else
{                                            {
/* instructions */                           /* instructions */
}                                            }
```

Figure 2. Condition statements

a) Using equivalence partitioning and boundary value analysis, generate the suitable test cases to test conditions for each if statement. Assume the min acceptable increment is 1.0 for all variables. [5 marks]

b) Derive the minimum set of test cases for all variables to achieve the Modified Condition/Decision Coverage. [15 marks]

[TOTAL Question 2: 20 marks]

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APPENDIX A: SAMPLE FRONT PAGE COVER

**UNIVERSITI MALAYSIA PAHANG
AL-SULTAN ABDULLAH**

**BCS3233
SOFTWARE TESTING**

SEMESTER II 2024/2025

ASSIGNMENT

Lab Section : 01 *(Remove unnecessary marks)*
Lecturer   : *(Your lecturer's name)*

Student Detail: *(Adjust all photos to fit in one page)*