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Final Assessment Test – November/December 2023

Course: **CSI1007 - Software Engineering Principles**

Class NBR(s): **4141 / 4146** Slot: **G1**

Time: **Three Hours** Max. Marks: **100**

KEEPING MOBILE PHONE/SMART WATCH, EVEN IN 'OFF' POSITION, IS TREATED AS EXAM MALPRACTICE

Answer ALL Questions

(10 X 10 = 100 Marks)

1. Assuming you are developing a product in which requirement uncertainty and risks are very high, customer expects short-lived demonstrations. Suggest the appropriate life cycle model where the above requirements are getting satisfied. Highlight the steps of the design process model and give their advantages and limitations.

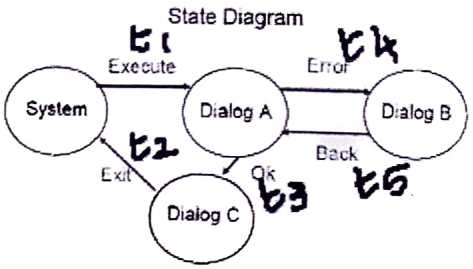
2. The goal for developing this app is to create convenience for customers and save their time by utilizing the "pre-order" option. Moreover, there are many other options which makes ordering and food selection feasible for the customers. Considering our target audience, budget is an important factor for middle class, students and workers while looking up for food options, hence the app provides "budget (low to high/high to low)" wise allocation of restaurants and deals making it convenient for people to order within their desired budget. The project will be divided into three phases: • Phase 1-Initial Phase: Basic Food Court QR App • Phase 2: Online order placement and payment • Phase 3: Recommendation and Data Analysis Moreover, the business risks, opportunities and success measures have been mentioned in the Vision and Scope document provided. The scope of each release is also mentioned.

   Identify functional and non-functional requirements for the above-mentioned scenario.

3. Find the states and events to draw the state transition diagram for payroll management system with neat explanation.

4. For example, if you have to create the keyboard for a computer, then it is a unit. Consider the case when you have to combine the keyboard and mouse of a computer together to see if it is working or not. Identify the technique applied to evaluate effective modularity. Explain in detail.

5. A dialogue system is a computer program that communicates with a human user in a natural way. Between the user and a computer-based application that permits interaction with the application in a relatively natural manner. For the above scenario create state table and Perform state table-based testing using state transition Diagram.



6. The number of characters in the string is a partition, e.g. between 1 and 50 characters is the valid partition with valid boundaries of 1 and 50. The invalid boundaries would be 0 characters (null, just hit the Return key) and 51 characters. Both of these should produce an error message. Design the test cases using Boundary Value Analysis and Robustness testing.

7. Consider the C program given below, Use Data Flow based testing method and Data flow coverage table represent the program in Flow Graph form.

```
int main()
{
  float principal, rate, year, ci;
  printf("Enter principal: ");
  scanf("%f", &principal);
  printf("Enter rate: ");
  scanf("%f", &rate);
  printf("Enter time in years: ");
  scanf("%f", &year);
  ci=principal*((pow((1+rate/100),year)-1));
  printf("Compound interest is: %f\n",ci);
  return 0;
}
```

8. Software Configuration Management (SCM) is an umbrella activity. Justify your answer with example.

9. Suppose that a project was estimated to be 2500 KLOC. Calculate the effort and development time for each of the three modes i.e., organic, semidetached and embedded, for the following values.

Project	a_b	b_b	c_b	d_b
Organic	2.4	1.05	2.5	0.38
Semi detected	3.0	1.12	2.5	0.35
Embedded	3.6	1.20	2.5	0.32

10. Create an Activity on Node Network considering the following set for activities, precedence and duration. Calculate, Earliest Start, Earliest Finish, Latest Start, Latest Finish, Total Float and Activity Span for each of the activities. Identify the critical activities and highlight the critical path (s).

Activity	Duration	Precedents
A	8	-
B	6	-
C	4	A
D	5	B
E	6	B
F	12	A
G	5	C
H	4	D
I	4	A
J	5	E,G,H
K	5	F, I, J

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