

Course No: **SWE5441**
 Course Title: **Software Modeling**
 Date: **13 / 08 / 2011**
 No. of Questions: **3**
 Time: **2 hr**
 Using Calculator (**Yes**)

University of Palestine



Final Exam

Summer term 2010/2011

Total Grade: 60

Instructor: **Eng. M. Timraz**
 Student No.: _____
 Student Name: _____
 College Name: **College of Eng.**
 Dep. / Specialist: _____
 Using Dictionary (**No**)

First Question

No. of Branches (5)

(5/60)

Draw a statechart diagram to describe the behavior of a simple microwave oven controller. The events that the controller must react to are as follows:

Name	Description	Effect
Add1Sec	User pressed the button labeled "+1sec" on the oven keypad.	Adds 1 second to the cook time.
Add10Sec	User pressed the button labeled "+10sec" on the oven keypad.	Adds 10 seconds to the cook time.
StartStop	User pressed the "Start/Stop" button on the oven keypad.	Starts cooking if there is a cook time set and the oven is not cooking. If the oven is cooking it pauses the cooking.
Reset	User pressed the "Reset" button on the oven keypad.	Clears the cook time and stops any cooking.
Power	User pressed the "Power Level" button on the oven keypad.	Only effective when a cook time is set and the oven is not cooking. Causes the cook power level to be decreased by 10%.
Tick	Occurs once per second.	
DoorOpen	The oven door is opened.	The oven should not cook with the door open.
DoorClosed	The door is closed.	

The following sequence of events would start the oven cooking for 13 seconds at 80% power, assuming that the door is closed: Add10Sec, Add1Sec, Add1Sec, Add1Sec, Power, Power, StartStop.

The following outputs are to be controlled:

Cook (pl): Causes the oven to cook at power level pl.

Stop: Causes the oven to stop cooking.

Display (val): Displays the string val on the display.

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Second Question

No. of Branches (3)

(14/60)

The Flight Travailing

Online ticket reservation application is to maintain flight details, flight status, reservation, cancellation process. The flight status which maintain flight ID, flight name, arrival time, departure time and also it contain details about the seats such business class seats, economic class seats. The flight detail contains the details about needed flight name as well as the details about the seats. Flight reservation which contains the flight ID, ticket number, passenger name, destination, flight name, business and economic class seats, travel charge, passport number, date of travel are reserved. Then the cancellation process is also carried out. Finally a report is generated about flight details, flight status, and reservation and cancellation tickets.

In your answer you may include any diagrams or text that you feel helps to clearly specify your design, but at a minimum you should include the following:

1. Use case diagram.
2. Class diagram.
3. Component diagram.
4. Activity diagram.
5. Sequence diagram.
6. State machine diagram.
7. Task diagram.

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Third Question

No. of Branches (2)

(8/60)

Emergency Monitoring System

An Emergency Monitoring System consists of several remote monitoring systems and monitoring sensors that provide sensor input to the system. The status of the external environment is monitored with a variety of sensors. Some of these sensors are attached to remote monitoring systems, which send regular status input that is stored at a monitoring service. In addition, from the sensor information, alarms are generated concerning undesirable situations in the external environment that require human intervention. Alarms are stored at an alarm service. Monitoring operators view the status of the different sensors and view and update alarm conditions.

In your answer you may include any diagrams or text that you feel helps to clearly specify your design, but at a minimum you should include the following:

1. Use case diagram.
2. Class diagram.
3. Activity diagram.
4. Sequence diagram.
5. State machine diagram.
6. Task diagram.

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