MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institute of MAHE, Manipal

FOURTH SEMESTER B.TECH. (INFORMATION TECHNOLOGY)

MAKEUP EXAMINATION, JUNE 2018

SUBJECT: SOFTWARE ENGINEERING [ICT-2204]

(REVISED CREDIT SYSTEM)
(23/06/2018)

TIME: 3 HOURS   MAX. MARKS: 50

Instructions to candidates:
• Answer ALL the questions.
• Missing data, if any, may be suitably assumed.

1A. Previously people wishing to visit places had to manually search for available accommodation at the visiting places. Also they themselves had to make reservation. People hardly had any knowledge of which are the worth seeing places and about its history. Such procedure was time consuming and energy wasting. Tour Reservation System has made life very easy for such visitors by saving both their time and energy. Visitor requests for scheme to check the availability of the desired tour package. This information is stored in Tour Information System. System will check whether the customer is existing or new. New user will enter his personal and tour details for reservation. In turn he/she will be provided with system generated unique ID and password. This login information could be used for further transactions. When customer is satisfied with tour package he/she would request for reservation of tour. Personal details of new customer is stored in cust_info while the details regarding the tour selected by particular customer is stored in tour_info and the details regarding it would be restructured in Tour Information System. Existing customer can update his/her personal details in cust_info and cancel reservation for tour from tour_info and changes regarding it are also reflected in Tour Information System. After confirming the tour package the customer will make payment either online or through staff by personally going at the office. Customer can make payment by cash, credit card or by cheque. System checks for the validity of staff. Once the payment is done by customer, valid staff will make Ticket Reservation System. Reserved customer will be able to view details about reservation by providing login information from cust_info and tour_info system. Administrator can add, delete or modify tour schemes from Tour Information System.

For the Tour Information System described above draw the class diagram by properly identifying the attributes, operations, multiplicity, relationships and rolenames.   5

1B. Bring out the difference between equivalence class partitioning and boundary value anaysis with reference to software testing.   3

1C. "As the number modules grow the effort and cost associated with integrating the modules also grows". Justify the statement.   2

2A. What are the different requirements engineering tasks? Explain.   5

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2B. Write the activity diagram for the following voting system described below: Once arrived at the polling station, elector gives his/her electoral card to the station president who checks if the polling station number in the electoral card is correct. Then station president checks the identity document and if OK he gives the ballot paper to the elector. Then the president waits for a voting cabin to get free and he gives the pencil to the elector. Before voting, the secretary gets the signature of the elector on the registry and puts a stamp on the elector certificate. Once elector has voted he/she inserts the ballot paper in the urn, giving back the pencil and taking back the id document.   **3**

2C. Explain the different approaches of integration testing.   **2**

3A. A customer contacts the company for event management. He provides the details of the event and its requirements. He explains its aims, when and where the event will take place, how long it will last, its format (Presentation/Workshop and/or Exhibition etc.), expected number of delegates/guests, equipment and furniture required,whether any delegate pack or promotional material is to be distributed, and other facilities required. The Event Manager studies the requirements of the event carefully and using the event management system finds the estimated cost and informs the customer about it. The customer may check whether the cost suits the financial provisions of the event. The company can also offer some readymade packages to choose from. If the customer agrees, the event is booked and the advance deposit is taken by the company. According to the requirements of the event, different bookings are made. A strategic schedule is prepared for smooth conduct of the event. The Event Management System helps the manager in different tasks of planning, scheduling and conducting the event. This system provides instant access to event-related information. Thus resources are efficiently and economically utilized. Once the event is conducted successfully, the bills are generated by the system. The system is extensible. New functionalities can be added to the system, whenever it is needed due to changing requirements.

Draw the use case diagram for the scenario given above in Q3A and also write use case specification for any two use cases.   **5**

3B. Draw the context level and level 1 DFD for a system which performs multiplication of two matrices where the matrices are provided as input by the user.   **3**

3C. Explain the use of any two types of combined fragments in sequence diagram with suitable example.   **2**

4A. Explain the different software design quality guidelines.   **5**

4B. Librarians categorize the library books into loanable and non-loanable books. The non-loanable books are the reference books. However, the loanable books are the non-reference books. After cataloguing the books, the books are available for loan. Students who borrow the library books should return them back before the due date. Books that are 12 months over the due date would be considered as a lost state. However, if those books are found in the future, they must be returned back to the library. If the books are found and they have been damaged or not required in the library, the books would be disposed.

Draw the state diagram with respect to the book for the problem statement given above.   **3**

4C. Explain the concepts of self association and rolenames with reference to class diagram.   **2**

5A. Explain the Unified Process Model with a neat diagram.   **5**

5B. Consider a project with following parameters:

    (i) **External inputs:** 10 with low complexity, 15 with average complexity and 17 with high complexity

    (ii) **External outputs:** 6 with low complexity and 13 with high complexity

    (iii) **External inquiries:** 3 with low complexity, 4 with average complexity and 2 with high complexity

    (iv) **Internal logical files:** 2 with average complexity and 1 with high complexity

    (v) **External interface files:** 9 with low complexity.

In addition to above, system requires:

    i. Significant data communication

    ii. Performance is very critical

    iii. Designed code may be moderately reusable

    iv. System is not designed for multiple installation in different organizations.

Other complexity factors are treated as average. Compute the function points for the project.

Type	Simple	Average	High
External inputs	3	4	6
External outputs	4	5	7
External inquiries	3	4	6
Internal logical files	7	10	15
External interface files	5	7	10

3

5C. How is software validation different from software verification?

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