



V SEMESTER B.TECH. IT INTERNAL EXAMINATIONS OCTOBER 2020

Mid Term Exam

SUBJECT: SOFTWARE ENGINEERING [ICT 3159]

Date of Exam: **24/10/2020**

Time of Exam: **12PM – 1.45PM**

Max. Marks: **20**

Instructions to Candidates:

- ❖ Answer ALL the questions & missing data may be suitably assumed
- ❖ The writing time is 12PM to 1.30 PM and uploading time is 1.30 PM to 1.45 PM.
- ❖ Draw neat and clean UML Diagrams.

1. On arrival at an airport, the passengers need to undergo some services laid by the 'Airport Authority Team.' Minor passengers and passengers with special needs (with disabilities) need to undergo individual check-ins. Assume all passengers carry luggage. The 'Tour package passengers' came through some agency will also go for individual counter check-ins through 'group check-ins.' Minor passengers should do the individual check-in at counter check-in, and passengers with special needs can do the individual check-in at either counter check-in or at Kiosk check-in. Further, passengers can go for baggage handling either at counter or kiosk check-in. On receiving the boarding pass, the passengers should go for a security check. The passengers who fail to pass the security check will be arrested by the police for further investigation.
Draw the Usecase diagram for the above given 'Airport check-in and security screening' scenario. **4**
2. The online publishing system allows authors to publish their various articles. The article might be either book or journal, and size should not exceed 50 pages. Authors need not be a registered user. The article will be reviewed by the editor, and intimation will be sent to the author. The members can search for various articles. They can view the journals published by different authors and also buy books. Members/authorized users are of two types, i.e., Institutional user and Personal user. They need to register by filling details such as name, e-mail address and Contact information, Attestation certificates, Payment options, and other details. The cost of registration for Institution is \$250 for a period of 10 years. The validity of an institutional user is as long as he/she is serving or studying in the institution. Institutional users can search and view journals and books. They can buy books for \$10. Personal users have a period of registration of 5 years at the cost of \$100. If their period of validation expires, then after which, they can renew the period of registration. A password recovery option is also provided to members. Guest users can view only the abstract part of the journal and can purchase the book for an amount more than the authorized user.
Draw the Swimlane diagram pertaining to the article based on the scenario given above. **3**
3. Which model is a risk-driven process model? Map the activities of that model to the generic software process framework activities and explain. **3**

4. Server S can store primary and replicated copies of a document. S_p and S_r are the states of the server S whenever it stores a primary or replicated copy of a document, respectively. Draw a state transition diagram when server S receives multiple primary and replicated copies of the document in any of the above-mentioned states. 2

5. Draw a class diagram for the following Criminal Information System (CIS) software. 4
The attorney general's office wants to develop a CIS, to help handle court cases and also make the past court cases easily accessible to the lawyers and judges. For each court case, the name of the defendant, defendant's address, the crime type (Eg. theft, arson etc), when committed (date), where committed (location), name of the arresting officer, and the date of the arrest are entered by the court registrar. Each court case is identified by a unique case identification number (CIN) which is generated by the computer. The registrar assigns a date of hearing for each case. For this the registrar expects the computer to display the vacant slots on any working day during which the case can be scheduled. Each time a case is adjourned, the reason for adjournment is entered by the registrar and he assigns a new hearing date. If hearing takes place on any day for a case, the registrar enters the summary of the court proceedings and assigns a new hearing date. Also, on completion of a court case, the summary of the judgment is recorded, and the case is closed but the details of the case are maintained for future reference. Other data maintained about a case include the name of the presiding judge, the public prosecutor, the starting date, and the expected completion date of a trial. The judges should be able to browse through the old cases for guidance on their judgment. The **Commercial Bankruptcy Lawyers** and **Criminal Lawyers** should also be permitted to browse old cases but should be charged for each old case they browse. Government and military lawyers need to be authenticated to browse old cases without any charge.

6. What are the criteria defined for good software design with respect to coupling and cohesion? 2

7. What is legacy software? Mention one advantage and disadvantage of the same. 2