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PES UNIVERSITY

PES University, Bengaluru

(Established under Karnataka Act No. 16 of 2013)

UE18CS353

JULY 2021: END SEMESTER ASSESSMENT (ESA) B TECH VI SEMESTER

UE18CS353 – OBJECT ORIENTED ANALYSIS AND DESIGN WITH SOFTWARE ENGINEERING

Time: 3 Hrs	Answer All Questions	Max Marks: 100

1	a)	What is a software life cycle model? What are the common characteristics of each phase or activity in a software life cycle model?	5
	b)	What is the problem with the following requirement statement? That is, what quality attributes the statement does not possess? How can it be improved? **"SR-4: The pages of the application will load in acceptable amount of time."**	4
	c)	Answer the following: 1. The model where the existing code is not modified to a great extent while adding new features is _____. The model where the existing code is modified to a great extent while adding new features is _____. 2. While preparing the project plan, we need to plan for documentation activities as well. True or False. 3. In Scrum model, at the end of every week, a working version of the software should be available. True or False. 4. An advantage of Component based software engineering is that Components could be used as a black box and hence reduces complexity of systems. True or False.	5
	d)	Discuss what is a risk and the steps (with 1 line description) involved in managing risks.	6
2	a)	Describe briefly (1-2 lines) any six approaches that can be taken to decompose a larger system into subsystems or components.	6
		Case Study for Questions 2(b) and 2(c) An OTT video service website, CutFlix, needs to have the following features. - There are two types of videos, a movie or an episode of a series. The movie has details like name, release year, producer, description, director and duration. - The movie also has associated actors. The platform should display the list of actors and the roles played by them, which may include multiple roles played by the same actor. - An episode belongs to the season of a series. It has a name, release date, producer, director, duration and description. - The season will have details like number of episodes, release year and description. The series has name, description, genres and maturity rating. - Each episode also has associated actors. The platform should display the list of actors and the roles played by them, which may include multiple roles played by the same actor. - A registered user can create multiple profiles. A profile has a list of videos viewed. On deleting the user account, all associated profiles should also be deleted. - A user can add the video to their profile's Watchlist. S/He could remove the video from Watchlist anytime. - The video currently being watched by the user appears in the profile's "Continue watching" list. The user can remove the video from this list at any point of time. The video is automatically removed from the list once the user completes watching the video.	
	b)	For the above case study, prepare the class diagram by identifying the classes, their properties, associations, association classes and cardinality.	8

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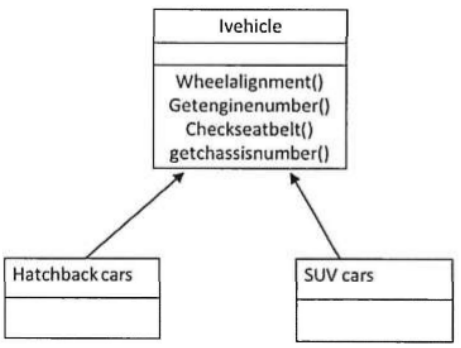
	c)	For the video object described above, prepare the state diagram identifying the states, transitions, events and activities.	6
3	a)	Class design given below has functionalities of vehicles. Now, the client wants to add a two wheeler class to the design. If the new two wheeler class implements interface Ivehicle, which design principle is violated? Modify the design in the given class diagram to accommodate the new class.  	8
	b)	Differentiate between Coding standards and guidelines for an organization with at least 2 examples for each.	6
	c)	How do you enable software to be testable? Write briefly about any six of these techniques.	6
4	a)	Choose most appropriate types of testing applicable in the following applications from the list of testing types given below: **Functional, System, Load, Stress, Performance, Compatibility, Security, Reliability, Availability, Regression, Usability, Acceptance** 1. Online shopping website (like Amazon), where they offer special sale days (like Prime Days). 2. A file management system (like Google Drive), where different types of files can be uploaded and viewed from multiple devices. It also needs to provide collaborative editing feature. 3. Anti-Virus software that needs to be kept up-to-date (in terms of software and data related to newer vulnerabilities) frequently.	6
	b)	Answer and indicate whether these statements are true or false. 1. Fault based testing is a Code based testing where a fault is purposely introduced into the code 2. Acceptance Testing is performed anytime during Agile development on request of the customer 3. It is easier to execute Regression testing manually 4. Destructive model is a testing model chosen as part of testing strategy 5. Test adequacy criteria helps to determine when to stop testing 6. Bugs/kLoC is a valid test metric	6
	c)	Contrast the four different types of Software Maintenance.	4
	d)	What is SEI CMM? Name two reasons why you would want to use it? Enumerate its five levels.	4

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5	a)	Answer the following: 1. Some of the most exemplary DevOps initiatives were started in giant and mature IT organizations. True or False. 2. An important ethic for a software engineer is to keep in mind the overall good the software will be for the larger society. True or False. 3. Trying out solutions until an optimal solution is created is _____ and working with one solution that suits all constraints and requirements is _____.	4
	b)	What are the challenges of Geographical distance with respect to Software Development? How can they be overcome?	8
	c)	Describe the term DevOps. Write briefly about the DevOps pipe line.	8