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Candidate's Seat No :_____

B.Sc Sem.-5 Examination

CC 301

Computer Science

November-2024

Time : 2-30 Hours] **[Max. Marks : 70**

Q1(A) Define open-source software and proprietary software. List and explain at least three advantages and two disadvantages of using open-source software compared to proprietary software. (7)

Q1(B) Explain the difference between system software and application software, providing two examples for each. How does each type of software contribute to the functioning of a computer system? (7)

OR

Q1(A) A software company has developed a widely used application. During an update, a bug was introduced that occasionally causes data loss. The company is aware of the bug but hasn't informed users yet, intending to fix it in the next scheduled update a month later.

Analyse the ethical considerations for the company in this situation, referring to at least two software engineering codes of ethics. Should the company release an immediate patch, inform users right away, or proceed as planned? Justify your answer by discussing the impact on stakeholders, including users and the company's reputation. (7)

Q1(B) A developer writes code for an application using a high-level programming language. Explain how this code is eventually executed on a computer.

Hint: Think about the process from source code to machine code. (7)

Q2(A) Explain the primary stages of the Software Development Life Cycle (SDLC) and how each contributes to successful software development. (7)

Q2(B) Compare and contrast the Waterfall and Agile software development methodologies. What are the benefits and drawbacks of each? (7)

OR

Q2(A) What role does a software testing phase play in the SDLC, and what are the different types of testing commonly performed? (7)

Q2(B) Imagine a scenario where you need to combine Agile and Waterfall methodologies for a project. Describe a hybrid model that leverages strengths of both approaches, and explain why this model might be beneficial. (7)

Q3(A) Explain the importance of requirement analysis in software development. Describe two consequences of inadequate requirement analysis. (7)

Q3(B) Differentiate between functional and non-functional requirements, providing two examples of each. (7)

OR

Q3(A) Discuss two techniques used in requirement analysis, explaining how each helps in clarifying requirements. (7)

Q3(B) A team is developing a system to manage hospital patient records. During requirement analysis, they discover two conflicting requirements: doctors need unrestricted access to patient records for urgent cases, while privacy

regulations restrict access to sensitive patient data. As the requirement analyst, how would you approach this situation to resolve the conflict? Propose a solution. (7)

Q4(A) Explain the importance of requirement analysis in software development. Describe two consequences of inadequate requirement analysis. (7)

Q4(B) Differentiate between functional and non-functional requirements, providing two examples of each. (7)

OR

Q4(A) What is a Software Requirement Specification (SRS) document, and what are three key components that should be included in it? (7)

Q4(B) A team is developing a system to manage hospital patient records. During requirement analysis, they discover two conflicting requirements: doctors need unrestricted access to patient records for urgent cases, while privacy regulations restrict access to sensitive patient data. As the requirement analyst, how would you approach this situation to resolve the conflict? Propose a solution. (7)

Q5 MCQ Attempt any seven out of twelve.(2 Marks each) (14)

1) What is software?
   A) Physical components of a computer
   B) A set of instructions for a computer to follow
   C) The electric wiring of a computer
   D) A hardware device
2) Which of the following is NOT a type of software?
   A) System software B) Application software C) Middleware D) Peripherals
3) Which of these is an example of system software?
   A) Microsoft Word B) Photoshop C) Windows OS D) Google Chrome
4) What does an operating system (OS) do?
   A) Manages software and hardware resources
   B) Only provides antivirus protection
   C) Operates only hardware
   D) Translates code from high-level languages to machine code
5) Which type of software enables users to perform specific tasks?
   A) Application software B) System software C) Utility software D) Firmware
6) What is the main purpose of middleware?
   A) To directly interact with the user interface
   B) To manage hardware resources
   C) To facilitate communication between different software
   D) To protect the computer from malware
7) Which of the following best describes open-source software?
   A) Free but copyrighted software
   B) Software with source code available for modification
   C) Software sold with a license
   D) Software only for government use
8) Which of the following is a programming language?
   A) Linux B) JavaScript C) Excel D) Android
9) What type of software would you primarily use to create a spreadsheet?
   A) Word processor B) Spreadsheet software C) Database software
   D) Web browser
10) What does GUI stand for in software design?
   A) Graphical User Interface
   B) General User Information

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C) Graphical Utility Integration
D) Generic User Installation

11) In software engineering, what does "SDLC" stand for?
A) Software Development Life Cycle
B) Software Design and Logic Control
C) Structured Database Lifecycle
D) System Development Language Code

12) What does API stand for?
A) Application Programming Interface
B) Applied Program Initiative
C) Application Processing Integration
D) Advanced Program Interface

ALL THE BEST