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PRANVEER SINGH INSTITUTE OF TECHNOLOGY KANPUR

Even Semester Session 2023-24 Pre-University

B. Tech. VI[th] Semester

Software Engineering (KCS-601/KDS-063)

CO Number	Course Outcome
CO1	Define[**1.Knowledge**] the concepts related to various aspects of Software Engineering.
CO2	Explain **[2.Comprehension]** various Software Development models, Requirement Engineering, Design paradigms and strategies used in testing and Maintenance.
CO3	Compute **[3. Application]** complexity based on different metrics and measure and apply the development & design concepts in DFDs, UML Diagrams etc.
CO4	Analyze **[4. Analysis]** various software development models, project management techniques and design paradigm.

Time: 3 Hrs. M. M. 100

Section A

Q1. Attempt all questions: **(2X10 =20 Marks)**

a) Define the characteristics of software. CO1
b) Explain the requirement engineering process. CO2
c) Describe stub and driver. CO2
d) Demonstrate the categories of software metrics. CO3
e) Explain the horizontal and vertical partitioning. CO2
f) Distinguish between ~~verification~~ and validation alpha & Beta CO4
g) Demonstrate CASE tools and give its benefits. CO3
h) Distinguish between verification and validation. CO4
i) Differentiate between adaptive and corrective maintenance. CO2
j) Illustrate the concept of modularity. CO4

Section B

Q2. Attempt all questions. **(10X3 = 30 Marks)**

(a) Describe the importance of cohesion and coupling in software designing. Also, explain its types. CO2

b-(i) Describe Software Crisis and its impact on customers and developers. Also, suggest some possible solution. CO2

OR

(ii) Differentiate between the features of Top-down and Bottom-up approaches of software design along with its advantages and disadvantages. CO2

c-(i) Define the structure chart and all its types with suitable example. CO1

OR

(ii) Define regression testing. State the process of test case prioritization in regression testing. CO1

Section C

Q3. Attempt all questions: **(10X5 = 50 Marks)**

a i) Differentiate between black box testing and white box testing and explain how these techniques can be used to test a system. CO2

OR

ii) Describe the importance of Spiral Model in Software Development Life Cycle and explain highlight the Risk analysis in this context. CO2

b i) Illustrate the rules of drawing Data Flow Diagram and its components. Draw various levels of Clothes Ordering System where the main entities are: Customer, clothes supplier, Sales Manager and clothes store. CO4

OR

ii) Investigate the methods of cost analysis in context of software and COCOMO model with the help of schematic diagram. CO4

c i) Examine the Halstead's Software Metrics of the given code CO4
(Program Length (N), Program volume (V) ,Estimated Program Length (N`), Potential Volume(V*) , Program Difficulty (D) , Programming Effort (E) , Time (T`))

```
int f=1, n=7;
for (int i=1; i<=n; i+=1)
f*=i;
```

OR

ii) Examine the various software design strategies. Analyze the points of difference between Function Oriented Design and Object-oriented Design. CO4

d i) Construct the control flow graph and Calculate the cyclomatic complexity with three methods and independent paths for the given code CO3

```
IF A = 100
THENIF B > C
THEN A = B
ELSE A = C
ENDIF
ENDIF
PRINT A
```

OR

ii) Determine risk management in detail. Also mention the points that differentiate project risk from technical risk. CO3

e i) Describe the following terms: CO2

i. Function Point
ii. Defect, Fault, Failure
iii. Decision Tables
iv. Requirement Elicitation

OR

ii) Describe SEI-CMM model with a neat diagram. Mention the points on which CMM is differ with ISO 9000. CO2