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Lectur-01: Question Pattern, Analysis, Syllabus

Govt CSE/IT Previous Year Question (Analysis)

SDLC (Bank, BPSC, NWPGCL, BREB), SMLC (BUET MSC), Feasibility Study (BTCL)

Waterfall Model (BUET MSC, GTCL, TGTDCL), Iterative Model, Spiral Model, Prototype (BPSC) Model, Spiral Model (BDCCL) Agile Model (BCIC), SCRUM (DESCO) Model, Incremental Model, extreme Programming (NESCO), DSDM

Design Pattern, TBL, Architecture (Bank, WZPDCL), MVC Pattern (NESCO, Bank, WZPDCL)

Singleton Design Pattern (CPGCBL, Bank, BREB), Adapter Pattern, Bridge Pattern, Composite Pattern

Proxy Pattern, Observer Pattern Demo, DFD Definition, Drawing process, DFD Level (BSEC) Advantages & Disadvantages, Factory Pattern (BUET MSC), Façade Pattern (BPDB), Strategy Design (BPDB)

Govt CSE/IT Previous Year Question (Analysis)

UML Diagram (DTCA, BPDB), Use Case Diagram (BUET MSC, DTCA, BPDB), Composite Diagram, Class Diagram (PGCB, BGDCL,), Structural Diagram, Component Diagram, Deployment Diagram, Object Diagram, State Diagram (BUET MSC), Sequence diagram, Activity Diagram

Git, Docker, Application Framework, UI/UX Design, SEO, Get & Post Method = MRA 20 API Tools and Technique= BPSC, UI/UX = BREB

Software quality control techniques, Verification & Validation (BTCL), Software testing, Unit Testing Environment = BCS/BPSC, Test plan and test cases (Bank), Cohesion & Coupling (BSEC, BREB)

Functional & Non-Functional (BAERA), Black box, White box, gray box, (BPDB, BREB, TBL), Alpha Beta = DMTCL, EPB.BREB Gamma testing, Alpha, Beta Version = BPSC, Effective & Exhaustive Testing = BPSC

User Acceptance, Regression, Stress, Smoke, Unit, (BUET MSC) Integration Testing = TGTDCL, MPL, EGCB, CPGCBL, BPDB, PGCB, PB, BPSC

Govt CSE/IT Previous Year Question (Analysis)

Equivalence Partitioning, Boundary Value Analysis (BUET MSC, BAERA), Secure Software Development Life Cycle (SSDLC), Confidentiality, Integrity, Availability, Nonrepudiation, (accountability), Authentication, Software security importance (BUET MSC), OWASP Web Application Security, Software audit (Bank) and security policies. Software Maintenance, Defect Removal Efficiency (BUET MSC), Code Review,

Web server and Application Server (BUET MSC, PGCB, EGCB),

Create a new host in Web Server. (Bank), CLR, .NET framework Optimize Loading time (Bank), Web Caching & System Administrator role. (Bank)

The risk management, Common Project, Product, and Business risks, Risk planning & Analysis = BPSC/BCS, Risk Monitoring, Software Project Failure (BUET MSC), **Software Quality Control, Configuration Management = BPSC**, Math: Estimate Cost Calculation-BTCL, NWPGCL, BIWTA, PERT Chart-BUET MSC, Effort-Calc (Bank),

Govt CSE/IT Previous Year Question (Analysis)

SDLC (Bank, BPSC, NWPGCL, BREB), SMLC (BUET MSC), Feasibility Study (BTCL)

Software Development Model: Waterfall Model (BUET MSC, GTCL, TGTDCL), Iterative Model, Spiral Model, Prototype (BPSC) Model, Spiral Model (BDCCL) Agile Model (BCIC), SCRUM (DESCO) Model, Incremental Model, extreme Programming (NESCO), DSDM.

Design Pattern, TBL, Architecture (Bank, WZPDCL), MVC Pattern (NESCO, Bank, WZPDCL), Singleton Design Pattern (CPGCBL, Bank, BREB); Adapter Pattern; Bridge Pattern; Composite Pattern; Proxy Pattern; Observer Pattern Demo;

Factory Pattern (BUET MSC); Façade Pattern (BPDB); Strategy Design (BPDB)

UML Diagram: Use Case, Class Diagram, State Diagram, Composite Diagram.

DFD Definition, Drawing process, DFD Level (BSEC) Advantages & Disadvantages

Previous Year Question (Analysis)

Pert Chart, Critical Path, Decision tree build, buy & customize, Reason for failure of a software project.

Software Validation & Verification, Application framework, DSS, MIS, Git, Docker, UI/UX design, Socket, Get, Post,

DFS, Microservice Architecture, Defect removal efficiency

BUET MSC CSE ICT (Syllabus Analysis)

Information System Design: System analysis fundamentals: systems, roles, and development methodologies; Understanding and modeling organizational system; Project management; Information requirements analysis: Interactive methods; Information gathering: Unobtrusive methods; agile modeling and prototyping; The analysis process: Using data flow diagrams; Analyzing systems using data dictionaries; Process specifications and structured decisions; Object oriented systems analysis and design using UML; The essentials of design: Designing effective output, Designing effective input; Designing databases; Human-computer interaction; Quality assurance and implementation: Designing accurate data entry procedures; Quality assurance and implementation.

Previous Year Question (Analysis)

1.Software maintenance life cycle. [BUET MSC 19]

2.What is waterfall model in software engineering, Write down its advantages disadvantages? [BUET MSC -17]

3. Explain briefly the waterfall model? [BUET MSC -17]

4. In an Assignment Submission System, a student cannot deny to have edited submission after the deadline. Which software security requirement signifies it? [BUET MSC CSE 21]

5. Relationship in use case diagram, describe any of them. [BUET MSC 15]

6. Class diagram of online shopping website. [BUET MSC 19]

7. Use case diagram of an e-commerce service? [BUET MSC -17]

8. State diagram for the above website [BUET MSC 19]

9. Show the class diagram of library management system. [BGDCL AM 24] [BUET MSC17]

Previous Year Question (Analysis)

10. In a database management system, we can use sequence number for identification of rows in table. What will be the best software engineering pattern when multiple user want to generate sequence number? [BUET MSC CSE 21]

11. Strategy design pattern has 3 algorithm and they are: Bubble Sort, Quicksort, Merge Sort/Insertion Sort, Selection Sort and Quick sort. consider a sorting application where we need to sort a list of integers. However, the sorting algorithm to be used may vary depending on factors such as the size of the list and the desired performance characteristics. about the system. Draw class diagram and write necessary codes to fill up this requirement. [BUET MSC 24]

12. What is unit testing and acceptance testing with example[BUET MSC 19]

13. A string has to be entered whose length must be between 8-12. Validate using String Boundary Value analysis. [BUET MSC 17]

14. For the Student Management System of BUET, which one is not a Non-functional requirement? [BUET MSC CSE 21]

Previous Year Question (Analysis)

15. Which one will be the best strategy for defect removal efficiency in software development? [BUET MSC CSE 21]

16. Which of the following is not an advantage of Micro service architecture? [BUET MSC CSE 21]

17. Pert chart (find critical path & projected time) [BUET MSC 15]

18. Draw a pert chart the following table. Find out the critical path and projected time[BUET MSC 16]

19. Find the critical path of scheduling of the given company. [BUET MSC 17]

Syllabus (BCS Written) (Analysis)

Introduction, Software process.

Project management. **(PERT chart)** Requirements engineering processes. RS) , SDLC, System models: Context, data, behavioral and object models: agile,waterfall model ,prototype, SCRUM, Spiral; Object oriented design techniques: Model , UML use case, class, Real-time software design. System design with reuse. Critical system design dependability,

Syllabus (BCS Written) (Analysis)

Software Maintenance, life cycle maintenance life

Critical system specification and development

Verification and validation, Software testing. Functional & non functional, Software cost estimation: math = 1 ta note

COCOMO model Halstead formula,

Graph: Cell analysis of complexity measures,

Software reliability and availability,

Quality assurance =

Previous Year Question (BCS) (Analysis)

1. Describe different techniques use the risk analysis of software development explanation. [BCS – 38th(971)]

2. Describe agile Model. [BCS – 36th(971)]

3. Explain each component of Unit testing Environment. [BCS – 36th(971)]

4. Describe the disadvantages of prototype technique[BCS – 36th(971)]

5. একজন software প্রকৌশলীর একটি software design করার দায়িত্বগুলো লিখুন। ৫ [45th BCS]

6. Software testing কী? নিম্নের term গুলোর পার্থক্যগুলো লিখুন: [45th BCS]

(i) Blackbox testing ও Whitebox testing

(ii) Verification ও Validation

Syllabus (NTRCA Written) (Analysis)

History, nature, relation of software engineering to other discipline, software development life cycle, Programming language; Software nature and qualities: product qualities, project qualities, correctness, robustness, usability, maintainability, portability, quality measurements; Software development life cycle: requirement, design, development, testing, maintenance;

Syllabus (NTRCA Written) (Analysis)

Software Engineering: paradigms, requirements analysis fundamentals, software design fundamentals, software testing techniques and strategies, software management and maintenance technique, case;

Syllabus (NTRCA Written) (Analysis)

Software development model: waterfall, agile, spiral, RDD, V model; Software engineering principles: modularity, abstraction, generality, object oriented, component oriented, structured.; Specification and Verification: requirement specification, descriptive specification, testing, analysis, debugging; Modeling and Design: basics of modeling diagram, UI design. Software Project Management: concepts, project metrics, estimation, risks management.

Previous Year Questions (NTRCA)

ক) Software Quality Assurance বলতে কি বোঝায়? উহার attribute গুলো আলোচনা করুন। [18th NTRCA]

খ) Spiral Model চিত্রসহ বর্ণনা করুন। [18th NTRCA]

(ক) Modularization কী? উহার সুবিধা সম্পর্কে লিখুন। ৫ [17th NTRCA]

(খ) Software Engineering এর ক্ষেত্রে Waterfall Model বর্ণনা করুন। ৫ [17th NTRCA]

(ক) Software testing কী? উহার গুরুত্ব আলোচনা করুন। ৬ [17th NTRCA]

Previous Year Questions (NTRCA)

(খ) Software maintenance এর সাথে কী কী বিষয় জড়িত, তা আলোচনা করুন। ৪ [17th NTRCA]

(খ) Feasibility analysis এর বিভিন্ন ধাপসমূহের সংক্ষিপ্ত বিবরণ দিন। ৬ [16th NTRCA]

৩। (ক) Software Development Life Cycle (SDLC) এর বিভিন্ন ধাপগুলো উল্লেখ করুন ও সংক্ষেপে বর্ণনা করুন। ৫ [16th NTRCA]

(খ) Software Development এর ক্ষেত্রে Agile মডেল সম্পর্কে লিখুন। অন্যান্য মডেলের তুলনায় Agile মডেলের সুবিধা কী? ৫ [16th NTRCA]

(ক) Feasibility Test কী? সফটওয়্যার উন্নয়নে উহার প্রয়োজনীয়তা বর্ণনা করুন। ১+৩=৪ [16th NTRCA]

Previous Year Questions (NTRCA)

(ক) Black-box ও White-box testing এর মধ্যে পার্থক্যগুলো লিখুন। [15th NTRCA]

(খ) একটি লাইব্রেরি ব্যবস্থাপনা সিস্টেম এর জন্যে Use Case Diagram অঙ্কন করুন। [15th NTRCA]

BUET Pattern

SDLC, Software maintenance life cycle, Steps of Feasibility Study, Waterfall Model, Agile Model, Protype Model, SCRUM Model, Spiral Model.

UML Diagram, Use Case diagram, Class Diagram, State Diagram.

Design Pattern: MVC, Observer Pattern, Singleton Design Pattern, Strategy design pattern,

Software Testing: Cohesion & Coupling, Unit Testing, Acceptance Testing, Black Box, White box, Gray Box Testing, Regression Testing, Alpha testing, Beta testing, Gamma Equivalence Partitioning, Smoke Testing, Boundary Value Analysis. Functional, Non-functional Testing.

BUET Pattern

Pert Chart, Critical Path, Decision tree build, buy & customize, Reason for failure of a software project.

Software Validation & Verification, Application framework, DSS, MIS, Git, Docker, UI/UX design, Socket, Get, Post,

DFS, Microservice Architecture, Defect removal efficiency

BIBM Pattern

What is SDLC? Explain every phase of SDLC.

Software projects unadjusted function point=180, value added faction 0.87 Performance fact= 4 , required effort in days? Answer: The formula for calculating the required effort in days is:

Effort (in rs)=1.23^ * (Unadjusted Function Points) * (Value Added Factor) * (Performance Factor)

Effort (in vs)=1.23*180*0.87^ * 4=495.2 Therefore, the required effort is 495.2 days.

What are the steps to create a new host in a web application deployment? How are they invovled with each other in the web application process?

Which steps should be taken to audit in software and policies?

What is test plan and test cases?

What is MVC? Draw MVC pattern.

Write names of few architectures of design pattern.

What is design pattern? Write the types of design pattern? Describe singleton design pattern..

BIBM Pattern

Create a complete information form in html.(Web Programming)

How to find the optimization loading time your application as a web developer.

What is CLR? Define the components of. NET Framework.

What is. Net Framework? Write the components of. NET Framework?

Show the structural model in software engineering. Phase of water fall life cycle.

(A) Testing is an activity that is performed to verify correct behavior of a program. Testing should be conducted in all the stages of program development. Describe different types of tests conducted in the implementation stage.

Web- caching, is it available for every user request? Why or why not?

BIBM Pattern

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BPSC Pattern

(a) What do you mean by agile ? Mention its four values. 5 বিভিন্ন মন্ত্রণালয়, বিভাগ, অধিদপ্তরের সহকারী প্রোগ্রামার ২০২৩

(b) How do you define 2-factor authentication? Give example. 5 বিভিন্ন মন্ত্রণালয়, বিভাগ, অধিদপ্তরের সহকারী প্রোগ্রামার ২০২৩

Explain SDLC with a diagram and what are the responsibilities of a Software Protocol Manager? 4 বাংলাদেশ জাতীয় সংসদ সচিবালয়ের উপসহকারী মেইনটেন্যান্স ইঞ্জিনিয়ার ২০২৩

2.a. In requirement analysis, there are two types of requirements among others: Functional Requirements' and 'Non-Functional Requirements Explain their needs appropriate examples. in software analysis with appropriate example. 5 বাংলাদেশ জাতীয় সংসদ সচিবালয়ের কম্পিউটার প্রোগ্রামার ২০২৩

b. Give an example of 'White Box Testing' and quote an example of 'Black Box Testing 5 বাংলাদেশ জাতীয় সংসদ সচিবালয়ের কম্পিউটার প্রোগ্রামার ২০২৩

Explain Software Development Life Cycle (SDLC). **[কৃষি বিপণন অধিদপ্তর-সহকারী প্রোগ্রামার 2022]**

Which factors are to be considered for software pricing? [কৃষি বিপণন অধিদপ্তর-সহকারী প্রোগ্রামার 2022]

BPSC Pattern

What is API? Explain with example. [কৃষি বিপণন অধিদপ্তর-সহকারী প্রোগ্রামার 2022]

How alpha testing is performed in software development? **[NTMC 2022-Assistant Database Administrator]**

What is software configuration management? Distinguish between computer program and computer software. **[NTMC 2022- Assistant Maintenance Engineer]**

How quality control can be ensured in software development. **[NTMC 2022-Assistant Maintenance Engineer]**

What is SDLC? Write about any two SDLC? **[BPSC 2017-AP]**

What do you mean by reliability and validity of a model? **[Multiple ministry 2022-AME]**

What do you mean by "Prototyping" in software design? What are the different steps in prototyping? **[Multiple ministry 2022- AME]**

What is Software testing? Discuss Effective and Exhaustive testing? **[NTMC 2022-AE]**

BPSC Pattern

1. What is cookie? What is its purpose? **[NTMC 2022- AE]**
2. What is difference between Black-box testing and White-box testing? **[NTMC 2022-AE/Instructor]**
3. What is SDLC? Define the activities of the design phase in SDLC. **[Home ministry 2022- Senior Computer Operator]**
4. Explain black-box and white-box testing? **[Home ministry 2022- Senior Computer Operator]**
5. Explain software validation, verification and modularity. **[Home ministry 2022- Senior Computer Operator]**
6. Explain the difference between black-box and white-box testing? **[Home ministry 2022- Senior Computer Operator]**

Others Pattern

Software Engineering: 2018-2023

What is the difference between black box and white box testing? [TBL AM 23]

What is software design pattern? What are the advantages? [TBL AM 23]

Define design pattern. Write about singleton pattern. [BREB AP 23]

What is the full form of SDLC? [CAAB AP 22]

What is MVC? Draw MVC pattern. [WZPDCL AE CSE 23]

Write names of a few architectures design pattern of software development. [WZPDCL AE CSE 23]

What is Alpha and Beta testing ? [BREB JE IT 19]

What is UI/UX ? What is the difference between them ? [BREB JE IT 19]

What is Cohesion and coupling ? [BREB ASE 19]

Difference between white box, black box and gray box testing? [BREB ASE 19]

What is SDLC [EPB AP 2018]

Thank You

Q&A