

SOFTWARE ENGG.

Date: _____

FINAL EXAMINATION - 2020.

17K-3730

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Section 'C'

Question # 01:

Software engineering ~~is~~ standards and ethos should be followed by the software engineers. Software engineering code of ethics must be a standard to make sure that software engineers commit to their profession in a beneficial way.

The principles they should adhere:

① Client and Employer :

- Software engineer ^{should} provide services in their area of competence.
- Should ~~not~~ identify, document and report all valid ~~an~~ concerns.
- Shall act in manner that is in best interests of their client and employer consistent with public interest.

② Product :

- Software engineers must ensure that product, that they deliver, meets the highest professional standards possible.

Ensuring that principles are followed :

In order to ensure that performance of employee is as per standards, they must be evaluated on how much 'code of SE ethics'

they are following and these should also be a part of company's defined code of conduct so that employee will need to make sure ~~not~~ to follow these principles-

Question #02.

Process maturity model basically have 5 levels. Based on knowledge of FAST, the maturity model level would be "optimizing level". As, it has gone through all the earlier stages and the main focuses are to optimize ~~to~~ improve the continuous process and user experience.

The main goals of 'Optimizing CMM level' are:

- Process change management.
- Defect prevention
- Technology change management.

Same are the goals FAST i.e: Flex which only undergo the defect prevention and change management when needed.

Question #03

Ethnographic studies means a social scientist spends a considerable time on analysing and observing ^{over} how people actually work. ~~It~~ It basically refers to qualitative study of social interactions, behaviors, and perceptions that occur within groups, teams, organizations, and communities.

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Disadvantages of ethnographic studies in understanding software requirements are:

- Requirements derived from co-operation and others' activities leads to change in ways in which we do things-
- Observer's/researcher's bias maybe involved.
- It's difficult to check the validity of researcher's qualitative analysis-

Question #04

process model : Incremental model.

Justification: The making of hardware would be sequential but once it's done it will follow and work upon incremental learning (machine learning) paradigm as learning/new implementation may be needed for the new target or whenever new example(s) emerge and it adjusts what has been learned according to new example(s).

Question #05

① Reducing demand on short term memory :

In our project "CV recommender System" the user info was saved into the database once they signup through the form and registers themselves on the site.

Now, the user doesn't need to re-enter the info when they login the website. ~~they~~

~~When user is redirected to welcome page all the session and user info is retrieved from backend and displayed on the dashboard -~~

User Info		
Name: Eisha Tir Raazia	Last name: Tir Raazia	Phone: XXX-XX
Gender: Female	Email: a@gmail.com	age: 26
User type: Recruiter		
<input type="button" value="Get recommendation"/>		

② Meaningful Context :

- Once the applicant has posted their resume ~~they~~ the modal box closes and they go back to welcome page after successful posting, indicating that user can now logout.

- Recruiter get proper navigation ~~is~~ through buttons and different routes to see recommendation for different jobs posted ~~A-~~

Question # 06:

(1)

Task elaboration

- Also called functional decomposition of processing task to accomplish some desired function.

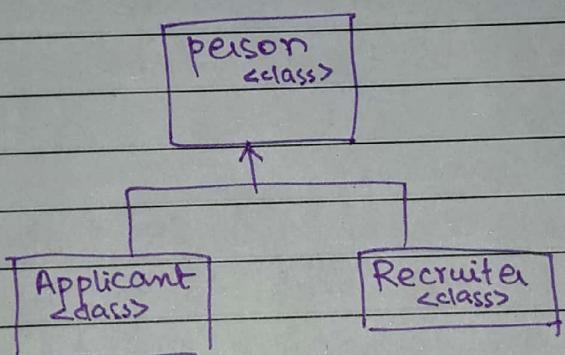
Object elaboration.

Process of examining the usecase and other information obtained from the user where attributes of each class are defined.

(2)

The object 'person' is categorized into two categories based on the 'usertype'

i.e :



Based on the 'usertype' of the object the tasks are conditionally performed
i.e

- Object type : applicant → will always be redirected to CV posting page and tasks will be performed accordingly.

- Object type : recruiter → will be redirected to 'post job' and 'get recommendation' page and will be able to perform tasks according to the 'usertype' object definition.

Question # 07

(I) Product Standard

→ As product requirements must be documented and changes must be requested through form. (so that the feasibility and cost of change can be re-evaluated).

→ This refers to satisfying user requirements and having appropriate approvals during product development and before delivery.

Process

(II) ~~Product~~ Standards.

→ As Jira refers to powerful work management tool to help teams manage and effectively keep track of the work/process-

(III) Product standard-

→ Having a standard SRS/SDS or project plan format ~~refers~~ to product standards which are technically justified and are well documented along with process models.

(IV) Process Standards

→ Developing complete code review activities ~~adds &~~ refers to process standards as this ensures the smooth process especially help in agile processes -

(V) Process Standards

Setting milestones in project timeline help in a good process and every task is evaluated time to time and development process is improved which adds to the process standards-

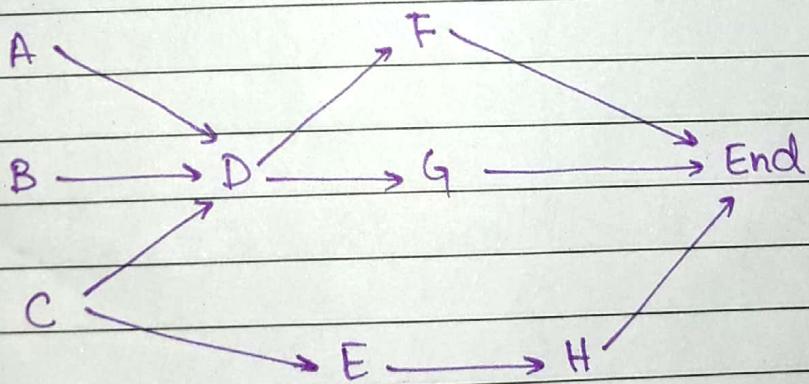
Question # 08

Following points will be checked:

- ① The competence of worker is checked by the software house and relevant trainings can be given.
- ② Software house adapts planning before processing and keeps track of activities.
- ③ Software house adapts written procedures prior to process.
- ④ Software house should also monitor customer satisfaction.
- ⑤ Software house should setup monitoring processes correctly to check the performance of work.

Question # 09

(A)



(B)

There are 7 obtained paths.

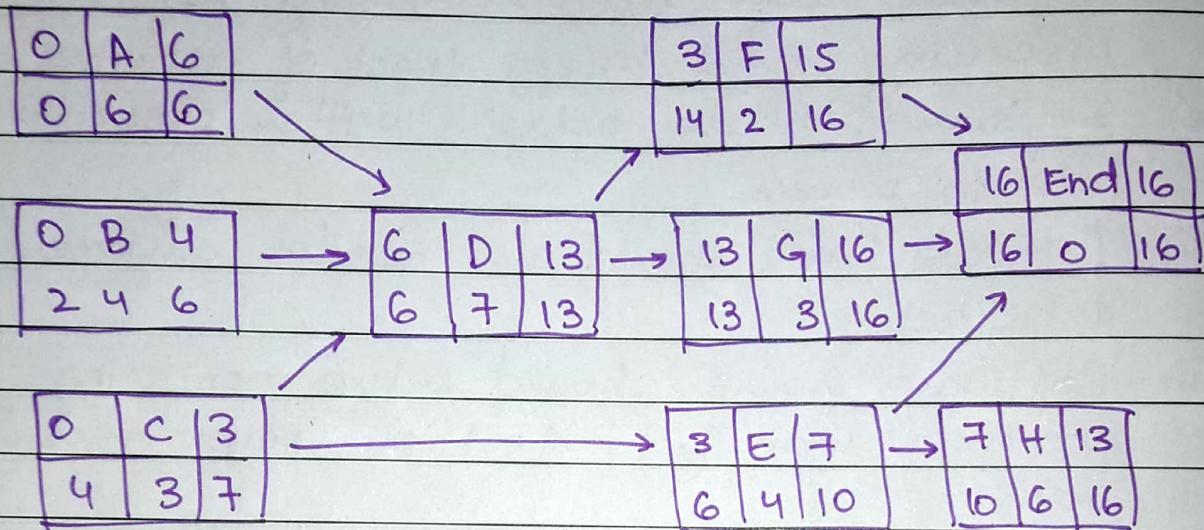
(i) $A, D, F, \text{End} \Rightarrow 6 + 7 + 15 = 18$

(ii) $A, D, G, \text{End} \Rightarrow 6 + 7 + 3 = 16$ (critical path).

(iii) $B, D, F, \text{End} \Rightarrow 4 + 7 + 2 = 13$

- (iv) B, D, G, End $\Rightarrow 4+7+3 = 14$
 (v) C, D, F, End $\Rightarrow 3+7+2 = 12$
 (vi) C, D, G, End $\Rightarrow 3+7+3 = 13$
 (vii) C, E, H, End $\Rightarrow 3+4+6 = 13$

(C)



(D)

for activity E

$$\begin{aligned} \text{Total float} &= LS - ES \quad \text{or} \quad LF - EF \\ &= 6 - 3 \quad \text{or} \quad 10 - 7 \\ &= 3 \end{aligned}$$

$$\begin{aligned} \text{Free float} &= M_i^{\text{ES}} - ES_{\text{activity}} - D_{\text{activity}} \\ &= 7 - 3 - 4 \\ &= 0. \end{aligned}$$

(E)

Yes, it effects critical path. Total duration will be 19 (after 3 weeks).

Question #10

	Sim	avg	comp	
EI	2	3	4	6
EO	5	4	5	7
EQ	4	3	4	6
ILF	1	7	10	15
EIF	2	5	7	10
Total	14	22	26	44
count				55

Project details :

(i) External inquiry :

- Login form
- Logout

(ii) External outputs :

- Signup form.
- Welcome page .
- Recruiters 'jobs posted' page
- List of recommended CVs.
- CV posting modal .

(iii) External input

- ~~get~~ user data input .
- update new job.
- post JD and delete a job .
- upload resume / update resume .

(iv) ILF → system conflict file

(v) EIF → similarity index according to JD.

→ Resume score by company
 JD posted - through recruiters interface.

Question # 11

LOC is used to estimate the cost of project by using past data of project combined with estimation variables in form of metrics. Estimation variable (size) i.e. expected value is usually computed as a weighted average of the optimistic (S_{opt}), most likely (S_m) and pessimistic (S_{pess}) estimates.

Limitations :

- It correlates poorly with quality and efficiency of code.
- LOC gives numerical value of problem size. Problem would occur when several instructions are written in 1 line in contrast with instructions written in multiple lines.
- It's difficult to calculate the LOC in form of final product. It's calculated once code is fully developed.

Question # 13

Reactive :

- ① → Immediate reaction, by grabbing fire extinguishers and calling for help, is required if fire breaks out.
- ② → Immediate actions are required if security vulnerability is found in a system.
- ③ → Immediate action is required if something is life critical (a patient who needs urgent treatment)

Proactive :

- ① Keeping a first aid kit in your car and home.
- ② Having emergency exit in a building in case, the fire breakouts.

Question # 14

Risks :

- User can login once with ~~single~~
~~their NIC no.~~ as unique id to ~~make~~
make sure that one family is served
once.
- There should be some verification
criteria through which app only

lets the deserving people to use the platform.

- Verification of donated amount (the transaction shouldn't roll back)

Question # 16

For testing :

- Testing become easy as they know the area of ~~the~~ code which need testing .
- Saves time as no need to learn about code
- Generating test case will also become easy .

Against testing :

- Testing maybe compromised to reduce error rate .
- Own error may not be identified easily
- Increases the effort of developers and may compromise with quality .