SOFTWARE ENGINEERING

ASSIGNMENT-5

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Ques-1) What is the difference b/w Generic and Custom s/w product?

Answer-1)

→ Generic Software Product development

It is a process executed by the developers that develop the software product. Usually the product is made of/for all types of business needs which has a positive demand in the market over a duration of time. Software development companies develop generic software on their own hand and handles its customer/group of companies having similar needs.

→ Custom software Product development

In this product development companies build product for/on individual client. Individual client may be an individuals group in company. The product has a distinct need in the market only for a limited time and is for specialized business needs.

Differences are

Generic software development Process	Custom software product development.

* It is done for developing general purpose software	* It is done to develop a software as per needs of particular product.
* In this process, the software developers have to depict end user specifications	* In this process the end user requirement can be aggregated by communicating with them.
* Form designing and marketing this development is very difficult	* This does not include marketing on it as it is developed for appropriate group of users
* Large number of users may be using this kind of software	* The software is used by limited no. of people
* Quality of a product may or may not be preference.	* Quality is the main criteria for this developmental process.
* Development team controls the process.	* Customers control the dendopment process
eg. word editing software.	eg. Inventory control management system.

Ques-2 What are the four important attributes which all software products should have? Four other attributes that may be sometimes significant.

Ans-2: The four important attributes that software have are as:-

* Maintainability:- Software must be maintainable
  → unmaintable software is difficult to change to meet new demands. Software should be able to easily evolve as change is inevitable in software business.
  → It would be inefficient if engineers had to return to the software from ground again every time they needed to make a change, it includes having a good framework, well documented clean code, even when changes are made, they must follow maintainibility.

* Dependability :- Software must be dependable and secure.

Software should not have any bug. The user should not face any sort of problems while using the software and incase if there is a failure in the system, there should not be any physical or economical damage by the software and unknown users should not have any access to the software.

* Efficiency :- Software must be efficient.

(•) Software should only use as much / many resources as it needs.

(•) wasteful use of resources may down and decrease responsiveness.

* Usability (Acceptability) :- Software must be acceptable and usable.

(•) It should be compatible with the system its users are/use

(•) Good interface increases the understandability & usability.

Example:- A web application.

The other attributes that are significant are :-

(•) Scalable

(•) Modern

(•) Ethical

(•) Original

(•) Reliable

(•) Interactivity.

Ques-3 Explain why the programs that are developed using evolutionary model are difficult to maintain?

Ans 3:- Evolutionary model also uses the prototyping model or just iterative model. In this model the prototypes of the model are resumed quickly for the clients. And for their feedback it is rebuild again.

But the softwares that are prepared using this model are difficult to maintain because of the following reasons:-

* It leads to implementing and then repairing way of building system
⇒ This practically increases the complexity as the scope of the system may expand beyond original plans.
⇒ Incomplete application may cause application not to be used as the full system was designed.
⇒ This is incomplete or inadequate problem analysis.

Ques-4 Consider a University registration system.....
..... identify risks associated with system.

Ans-4 The risks associated with such a system are as follows

* The ~~software~~ hardware associated with system may not be able to handle multiple ports.
* The servers may collapse due to heavy network traffic by students on registration day.
* The system may not be scalable to other departments / universities (if needed).
* Lower productivity of system may lead to search for new options.
* Number of students registering per year may increase drastically
* The system might not be able to handle data of these many users.
* The system may not be secured enough & thus result is unauthorised access by people.

Ques-5) Define forward engineering and reverse engineering. Describe the situations for which they are suitable to apply.

Ans-5) Forward engineering

→ It is the method of creating or making an application with the help of the given requirements.

→ Forward engineering is also known as Renovation and reclamation

→ It requires high proficiency skill. It takes more time to construct/ develop an application.

→ The nature of forward engg. is perspective

→ Forward engineering is suitable for:-

(a) Construction of electronic kit

(b) Construction of DC motor etc.

Reverse Engineering

→ In reverse engineering / backward engineering, the information is collected from the given application.

→ It takes less time than forward engg. to develop an application.

→ The application are broken to extract knowledge of its architecture

→ It is a less proficiency skill

→ Reverse engg. is suitable for :-

(a) Research on INSTRUMENTS

(b) Blood AIR Value Components etc.

Ques-6) Define black-box / white box testing. Apply them by hand to any program and write the result (one technique for each testing).

Ans-6) BLACK-BOX Testing

→ It is a s/w testing method in which the internal structure/ design (Implementation of the item being tested is not known to tester)

⇒ It is mostly done by s/w testers.
⇒ This testing can be done on the basis of requirement specification document
⇒ It is not suitable or preferred for algorithm testing.
⇒ One such technique used for black box testing is :-

* Boundary value analysis : Boundries are good places for errors to occur hence boundries are also checked apart from valid testcases.

Ex :- Consider the grading system of a University-

90 - 100 : Excellent
75 - 89 : Distinction
60 - 74 : First division
50 - 59 : Second division
0 - 49 : Fail.

average of three subject marks are considered.

⇒ Boundry values = { 0, 1, 50, 99, 100 }

Hence, the test cases (BV) would be considered apart from valid testcases.

WHITE- BOX TESTING :-

→ It is a way of testing software in which the tester has knowledge about internal structure / code of the software.
→ It is mostly done by s/w developer. This testing is started after detail design document.

→ It is the most time consuming and mandatory to have knowledge of programming.
→ One such technique used is Condition coverage :-

In this technique all individual and must be covered as shown in the following example.

Ex (1) Read X, Y

(2) If (X==0 || Y==0)

(3) Print 'o'

The two conditions : X==0 & Y==0, now test these conditions get TRUE and FALSE as their values, one possible example could be :-

TC1 : X = 0, Y = 55

TC2 : X = 5, Y = 0

Ques-7) Define an example where social and political factors may influence system requirement. Explain why these factor are impt. in example.

Ans-7) The example of stock market and exit poll system

(i) Stock market system

→ social factors

* Usually stock market is maintained through the dealings made by customers
* Thus we can say that social factors (customers) affect the stock market.

Political factors

* In case of any emergency / pandemic, the government can ease control of the share market,
* Thus, we can say that it is affected by political factors.

Exit poll system

Social factors

* The data is collecting by surging voters for their opinion across a vast region.

* Thus it can be said that it is affected socially political factors
* The agency conducting the exit-poll may be biased (politically).
* Hence it could be said that it is affected politically.

(Q) Do we really need maintenance. If yes then give justification.

Ans:- Yes, software maintenance is required/needed because of the following reason.

* Bug fixing
→ Bug fixing comes at a priority to run the s/w seamlessly.
→ This process contains search out for errors in code and correct them.
→ This must be done without hurting rest of the functionalities of existing software

* Capablity Enhancement
→ This comprises improvement in features and functions to make solution compatible with varying market environment.
→ It enhances software platforms, work patterns, hardware upgrades, compiles of all other aspects that affect system workflow.

* Removal of outdated functions
→ The unwanted functionalities are use less. Moreover, by occupying space in software, they hurt efficiency of the s/w.
→ The s/w maintenance process, some elements of UI & coding are removed and replaced with new development using latest tools and technologies. This make the system adaptive to cope with changing circumstances.

* Performance improvement
→ To improve sys be performance, developers detect issues testing through treshold.
→ It improves security of system.
→ s/w maintenance keeps the solution lean & clean.