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SE - Assignment - 1

1. What is the significance of recognizing software requirements in the software engineering process?

- As the technology changes, the user requirements and environment on which software is working also changes so every organisation is ranked based on the software engineering principles used by that organisation.

- Implementing and managing large ~~scd~~ size of software programmes requires a specific method modularize the tasks so that size of software can't harm the software quality.

- Software engineering provides methodology for implementing complex software systems with high quality.

Extending the previous software to add new functionality requires more cost in terms of time to develop and effort taken by people, as compared to the process of developing new software to provide that functionality.

2. Describe the main characteristics of different process models used in software development.

* Waterfall model : Sequential and linear approach. Each phase must be completed before moving to the next one.
Clear and structured, suitable for projects with well-defined requirements, minimal changes and stable scope.

* V-model : Parallel development and testing approach. Each development phase is followed by a corresponding testing phase.
Limited adaptability to changing requirements, potential for miscommunication between development and testing phases.

* Incremental model - Similar to iterative models, but the software is built in increments, each delivering specific functionality.

- Requires careful planning to define increments, possible intergration challenges.

3. How does the capability maturity model contribute to impraving software development process?

- The CMM models application in software development has sometimes been problematic applying multiple models that are not integrated within and across an organisation could be costly in training appraisals and improvement activities.
- CMMI framework consists of a collection of computer progranms based on knowledge engeneering, software engeneering, integrated product and process development and provides sourcing.
- CMMI framework has three groups:

1 CMMI for development.
2 CMMI for service.
3 CMMI for aquisation.

4. Explain the differences between:

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Perspective process model	Evolutionary process model
– Developed to bring order and structure to the software development process. – It can accomodate changing requirements – It is more popular – Waterfall model and increment models are a few examples of perspective process model	Stages consist of growing increments of an operational software product with evolution Improvement is required in the product. It is less popular. eg: Spiral and prototyping model as well as RAD model

5 Compare and contrast the waterfall model and agile methodologies in terms of project planning and progress tracking.

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Waterfall model is the approach used in software development process.
It is also called as classical life cycle model or linear sequential model.

Agile software development describes an approach to software development under which requirements and solutions evolve through the collaborate efforts of self-organising and cross functional teams and their customers.
The term agile was popularized, in this context, by the Manifesto for agile software development.

6 Justify the relevancy of the following comparision for software development models

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Features	Waterfall models	Incremental models	Prototyping models
Requirement specification	Well understood	Not well understood	Not well understood
Understanding requirements	Well understood	Not well understood	Not well understood
Availability of reusable components	No	Yes	Yes
Risk analysis	Only at the beginning	No	No
User involvement	Only at the beginning	Intermediate	High
Flexibility	Rigid	Less	Less
Cost control	Yes	No	No