Learning Journal 1

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Key Concepts Learned: In this week, chapter 3 was discussed. This chapter covered different methods for effort and cost estimation of a software project. For every software project, an appropriate effort estimating technique is selected based on requirements. The different techniques for making effort estimation are as follows:

- Estimation by Analogy: Estimate new projects by dividing the estimate into smaller components and comparing them to related previous projects.
- Function Point Analysis: FPA (Function Point Analysis) mostly uses logical design to quantify the functionality the software offers to the user.
- Wide Band Delphi: This technique involves holding brainstorming sessions with the project team and coming up with consensus figures for effort estimates.
- Algorithmic cost modelling: Project managers estimate the values of product, project and process attributes that go into cost estimation. These functions are then calculated mathematically.
- COCOMO: COCOMO (Constructive Cost Model) evaluates an estimate for any project using project assumptions, definitions, and many cost factors.

Various software development lifecycle models such as waterfall and iterative models are used in software projects. Comprehending the variations in software product construction is necessary for accurately estimating effort for any kind of software development lifecycle model.

Application in Real Projects: In real world projects, software effort estimation approaches play a critical role in estimating the time, effort, and resources required to construct a software system. The applications of effort estimation techniques in real world projects are as follows:

- A tax processing system is being developed by a government body. As time goes on, more specifications are introduced, like how to handle tax exemptions and deductions. The extra function points connected to these new features are computed using FPA.
- A solar farm is going to be constructed by a corporation. They calculate the installation, maintenance, and running costs of solar panels using an algorithmic cost model, taking into account variables such as the quantity of panels, location, and energy output.

Some challenges of using effort estimation techniques in real world projects are as follows:

- When a project first starts, its requirements are sometimes not well specified, which makes it challenging to determine how much work will actually be required.
- Estimation frequently requires subjective assessments, which can result in biases like optimism bias, which undervalues work, or overestimation because of risk aversion.
- Inaccurate effort estimates can arise from miscommunication among project managers, developers, and clients, which can lead to misconceptions regarding scope and complexity.

The solutions for these challenges are as follows:

- As requirements become clearer through iterative development cycles, use agile estimate techniques.
- To lessen human bias, use historical data-driven techniques like parametric models (like COCOMO), which rely on facts rather than gut feeling.
- Improve communication by doing joint application development or requirement workshops to make sure all stakeholders are aware of the project's scope.

Peer Interactions: This week, there was a change in our team composition since one of the members left the team and another member joined our team in place of that member. We have decided to work on project titled “Powered Resume Builder”. In team discussion, we discussed about project initiation and market analysis. We also discussed about real world applications of this project, issues which we may face during this project and various solutions for these issues.

Challenges Faced: The complex steps and weighting system of Function Point Analysis left me a little confused during implementation, while no major difficulties were encountered. I looked into appropriate material to get over my confusion and read the book for clarification. To enhance my understanding of the concept, I also tried to get clarification by using an example to visualize the procedure.

Personal development activities: My way of thinking has changed as the course has progressed from a standard development job to a managerial one. Gradually exploring different subjects and coming up with solutions for the project required a lot of research, which led to a thorough comprehension of the project from a business perspective. I was able to comprehend methods of project managers and the significance of effort estimation better thanks to the principles I learnt.

Goals for the Next Week: With the deadline approaching, I want to make progress on the project initiation and market analysis duties this coming week. To guarantee a rapid and thorough assessment, I intend to undertake a complete revision of the previous chapters. In order to discuss any issues about the initial project submission, I will also need to arrange a meeting with my project colleagues. In order to deepen my learning and get ready for the next chapter in class, I also plan to examine case studies that are similar to the ones that are included in our materials.