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Senior Project Written Assignment #1

Due: 01/31/2024

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1.1) What are the basic tasks that all software engineering project must handle

1. Requirements Gathering
2. High-Level Design
3. Low-Level Design
4. Development
5. Tasting
6. Deployment
7. Maintenance
8. Wrap-up

1.2) Give a one sentence description of each task you listened in Exercise 1

1. Requirements Gathering: Understanding clients' needs and desires
2. High-Level Design: Outline main components of an application and their interactions.
3. Low-Level Design: Detailed plans for construction of an application's components.
4. Development: Writing the code to create the application.
5. Tasting: Running the application in different circumstances to catch any bugs.

6. Deployment: Implementing an application for use.
7. Maintenance: Upkeep of an application.
8. Wrap-up: Concluding the project, including documentation and final reviews.

2.4) Compare Google docs change tracking to Github

Google Docs is simpler and suited for document editing. GitHub is more detailed, ideal for coding projects. Both support version tracking and collaboration.

In Google Docs' Version History, you can:

- Name versions for easy identification.
- View changes by comparing versions.
- Highlight differences with color-coding.

Google Docs vs. GitHub:

- Google Docs is user-friendly for documents, GitHub is advanced for code.
- GitHub tracks changes in detail, Google Docs shows broader changes.
- GitHub integrates with development tools; Google Docs with Google Workspace.

2.5) What does JBGE stand for and what does it mean?

JBGE stands for “Just Barely Good Enough”. It means that the solution to something meets the minimum standards, but does not exceed them.

Data for Problems 4.2 and 4.4

Task	Time (Days)	Predecessors
A. Robotic control module	5	--
B. Texture library	5	C
C. Texture editor	4	--
D. Character editor	6	A, G, I

E. Character animator	7	D
F. Artificial intelligence (for zombies)	7	--
G. Rendering engine	6	--
H. Humanoid base classes	3	--
I. Character classes	3	H
J. Zombie classes	3	H
K. Test environment	5	L
L. Test environment editor	6	C, G
M. Character library	9	B, E, I
N. Zombie library	15	B, J, O
O. Zombie editor	5	A, G, J
P. Zombie animator	6	O
Q. Character testing	4	K, M
R. Zombie testing	4	K, N

4.4) Use critical path methods to find the total expected time from the project's start for each task's completion. Find the critical path. What are the tasks on the critical path? What is the total expected duration of the project in working days?

Critical path => through tasks D, G, I, E, H, M, Q.

- This sequence of tasks determines the minimum time needed to complete the project; any delay in these tasks will directly impact the overall project duration.
- The total expected duration of the project, as determined by the critical path method, is 32 working days. This is the earliest the project can be completed, assuming each task is started as early as possible and there are no delays.

4.6) In addition to losing time from vacation and sick leave, projects can suffer from problems that just strike out of nowhere. Sort of a bad version of *deus ex machina*. For example, senior management could decide to switch your target platform from Windows desktop PCs to the latest smartwatch technology. Or a pandemic, hurricane, trade war,

earthquake, alien invasion, and so on could delay the shipment of your new servers. (Not that anything as far-fetched as a pandemic might occur.) Or one of your developers might move to Iceland. How can you handle these sorts of completely unpredictable problems?

- Risk Management: involves identifying potential risks and developing strategies to mitigate them.
- Thorough planning, including to maintain a Buffer
- Effective Communication: clear communication within the team and with stakeholders is crucial. Keeping everyone informed about the current status of the project, potential risks, and the strategies in place to handle these risks can help in managing expectations and ensuring that the team is prepared to adapt to changes.
- Have an Emergency Response Plan

4.8) What are the two biggest mistakes you can make while tracking tasks?

- Ineffective planning
- Poor communication within the team

5.1) List five characteristics of good requirements

- Being clear
- Unambiguous
- Consistent
- Prioritized
- Verifiable

5.3) Build a program called TimeShifter to upload and download files at scheduled times when you're on vacation.

User Interface and Experience

- a: Monitor uploads/downloads remotely.
- b: Specify website login parameters.
- d: Select Internet location, local file, and time for upload/download.
- e: Schedule uploads/downloads at any time.
- l: Option to empty the log.
- m: Display reports of upload/download attempts.
- n: View log reports on a remote device.

Functionality and Features

- c: Specify upload/download parameters like number of retries.
- f: Allow uploads/downloads to run anytime.
- h: Run uploads/downloads sequentially.
- i: Manage overlapping upload/download schedules.
- j: Perform scheduled uploads/downloads.
- k: Keep a log of all upload/download attempts and outcomes.
- o: Email notification for failed attempts beyond retry limit.

- p: Text message notification for failed attempts beyond retry limit.

Performance

- g: Ensure a minimum transfer rate of 8 Mbps.

It appears that all categories are covered by the requirements. Each requirement is tailored to cater to specific aspects of user needs, technical functionality, and performance standards necessary for a comprehensive file transfer management program.

5.9) Figure 4-1 shows the design for a simple hangman game that will run on smartphones. When you click the New Game button, the program picks a random mystery word from a large list and starts a new game. Then if you click a letter, either the letter is filled in where it appears in the mystery word, or a new piece of Mr. Bones's skeleton appears. In either case, the letter you clicked is grayed out so that you don't pick it again. If you guess all the letters in the mystery word, the game displays a message that says, "Congratulations, you won!" If you build Mr. Bones's complete skeleton, a message says, "Sorry, you lost."

Brainstorm this application and see if you can think of ways you might change it. Use the MOSCOW method to prioritize your changes.

Must-Have Changes

- Add different difficulty levels for the game.
- Implement a hint system that provides clues after a certain number of incorrect guesses.

Should-Have Changes

- Include a multiplayer mode where players can challenge each other.
- Provide themed word lists (e.g., animals, countries, movies) for players to choose from.

Could-Have Changes

- Add a feature to customize the appearance of Mr. Bones.
- Implement achievements or rewards for winning streaks or difficult words.

Won't-Have This Time (But Might Consider for Future)

- Introduce a learning mode that helps players learn new words and their meanings.
- Add language options to make the game multilingual.