**Task 2A Answer Template**

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| **Group number: 3** | |
| **PM: GHALYA ALJASSIM** | **Secretary: MUNIRAH ALYATAMA** |

1. Please submit the MS Project file showing your WBS, Gantt chart and critical path (on a network diagram) to Canvas. The file should open to show a Network Diagram that shows the Critical Path.

You should only use MS Project (recommended version 2010)

1. List all the tasks on your critical path. Describe how you could modify your project to take three of these off the critical path.

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| List of all critical path tasks:   1. 1.1 Research space-grade microcontrollers 2. 1.2 Research power regulation circuits 3. 1.3 Research error correction protocols 4. 1.4 Define system requirements 5. 2.1 Initial design for microcontroller board 6. 2.2 Initial design for power board 7. 2.3 Initial design for error correction board 8. 2.4 Select off-the-shelf components 9. 2.5 Detailed schematic design 10. 2.6 PCB layout and design 11. 2.11 Assemble prototype circuit boards 12. 3.1 Functional testing of circuit boards 13. 3.2 Review and revise based on testing 14. 3.3 Update power board design 15. 3.4 Update microcontroller board design 16. 3.5 Update error correction board design 17. 3.7 Manufacture revised PCBs 18. 3.8 Assemble updated prototypes 19. 4.1 Integration testing 20. 4.2 Thermal and vibration testing 21. 4.3 Radiation and high-g testing 22. 4.4 Full system assembly 23. 4.5 Comprehensive system testing 24. 4.6 Final validation and readiness check 25. 4.8 Space environment simulation 26. 4.9 Complete final documentation 27. 4.10 Deliver final system | |
| Three critical path tasks | How to take them off the critical path |
| 1. 2.1 Initial design for microcontroller board | Parallelize this task with the design of the power board by assigning additional resources or breaking it into smaller components. |
| 2. 3.3 Update power board design | Delegate a dedicated team to handle the updates, ensuring this task doesn’t delay the main testing process. |
| 3. 4.5 Comprehensive system testing | Implement partial testing earlier in the project phases to reduce the workload during comprehensive testing. |
| What would be the effect on other parts of the project if you did this?  This approach would increase flexibility in the design phase, improve resource efficiency by allowing parallel work, and lower the risk of encountering issues during final system testing, leading to smoother project delivery and improved quality control. | |

We have not covered Critical Path in detail yet: this task is meant to get you thinking about this before next lecture.

1. **In no more than 200 words** explain: In what ways does a Gantt chart / network diagram aid the completion of a project? You need to think about what information it provides and how it will be used.

      The Gantt chart and network diagram for this project play a crucial role in ensuring its smooth and timely completion. The Gantt chart provides a clear visual timeline of all tasks, including their start and finish dates, durations, and dependencies. For instance, tasks like “Research space-grade microcontrollers” and “Initial design for microcontroller board” are organized sequentially, showing where tasks overlap and where resources can be allocated efficiently. This layout helps the team stay on track, as they can visually see the project’s flow and identify any potential delays early.

The network diagram, on the other hand, maps out the critical path—the series of tasks that directly affect the project's end date, such as “Functional testing of circuit boards” and “Final validation and readiness check.” By focusing on these critical tasks, the team can prioritize resources and effort where it matters most, minimizing risks of delays.

Together, these tools serve as a roadmap, guiding the team through each phase and milestone. They make it easier to monitor progress, communicate timelines, and adjust as needed to ensure the project meets its February 26 deadline successfully.

Appendix – Meeting Agendas and Minutes

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