QN1. Explain the fundamental concepts of version control

ANS:

* Repositories- A storage space for project files and their version history. Can be local or remote
* Commits- each commit has a unique identifier and includes metadata such as the author, timestamp and a message describing the changes
* Branches- allows the user to create separate lines of development or fix bugs without affecting the main codebase
* Merging- this allows multiple develpoers to work on different features simultaneously and then integrate their work

QN2.why GitHub is a popular tool for managing versions of code.

ANS:

* Collaboration: GitHub makes it easy for multiple developer to collaborate on projects, offering features like pull requests, code reviews and issue tracking
* Community: GitHub hosts millions of open-source projects where developers can share code, contribute to others’ projects and learn from each other
* User-Friendly Interface: GitHub provides an intuitive web interface for managing repositories, making it accessible even to those new to version control
* Documentation and Support: Extensive documentation and active community support helps users troubleshoot issues and learn best practices

QN3.How does version control help in maintaining project integrity?

ANS:

* History Tracking- Version control maintains a complete history of changes, allowing teams to understand how the project has evolved and why specific decisions were made
* Branching and Merging- Teams can isolate changes until they are ready to be integrated into the main codebase, reducing the risk of introducing errors
* Collaboration Management- Version control systems manage contributions form multiple developers, reducing the likelihood of overwriting each other’s work and facilitating smoother collaboration
* Backup and Recovery- Remote repositories serve as backups of the codebase, protecting against data loss due to hardware failures or accidental deletion