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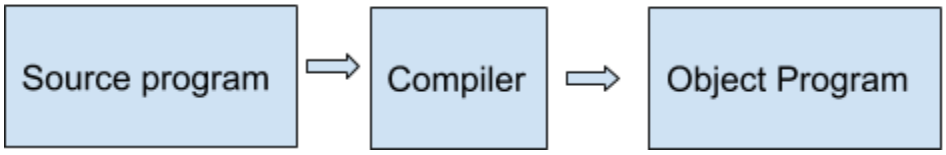
Exercise 01 - Programming Lab II

Task 1 Get Access to Gitlab (0 pt)

Task 2 What is an Interpreter? (1 pt)
Explain the difference between a compiler and an interpreter.

A compiler translates a high level language into a low level machine or assembly language.



The interpreter translates a high level programming language into a comprehensive language.

Features	**Compiler**	**Interpreter**
Input	Entire program at a time	Only single line of a program at a time
Output	Intermediate object code generated	Intermediate object code not generated
Execution	Compilation before execution	Compilation and execution are simultaneous
Speed	Fast	Slow
Memory	More memory	Less memory
Error display	All at a time	One at a time
Examples	C,C++	Python, Perl

Task 3 What is Python? (1 pt)
Is Python a compiled or interpreted programming language?

Python is an interpreted programming language.

Task 4 What is Git? (0 pts)

Please read chapters 1 and 2 of the pro git book: https://git-scm.com/book/en/v2.

Task 5 Explain a VCS (2 pts)

Explain the term "version control system" and how it relates to git.

Version Control System (VCS) is a tool used by software engineers to keep track of modifications to their files during the development of applications. It supports teams working on the collection of files, ensures collaboration on the project and improves the quality of the project. It manages small changes to a project and tests, fixes and undo the ideas.

The contents that can be managed by VCS:

a. Any content that requires frequent modification - e.g. : source code of a project
b. Editions of a book, website

Git is an open source, free, distributed version control system. Each user has a local copy of the complete history of the project. The user can work offline. The contents are synchronized between the repositories by pulling content from or pushing content to a remote repository.

Task 6 Explain Git (3 pts)
When using git, a file can reside in three different main stages or areas. Name and explain these stages.

The three main stages of a file can be located are :

a. Modified
b. Staged
c. Committed

Modified: This refers to the contents of the file(s) being changed, but that are not committed to the database.
Staged: It means that a modified file(s) are marked in its current version to go into the commit. It contains a list of files that are planned for the next commit.
Committed: This refers to the storage of the files in the local database. It contains all the commits that have been made for the project.

Task 7 Why Git? (3 pts)
Git is incredibly useful in a software development setting. Give 3 examples of how git is beneficial to someone writing code for a project.

Git plays an important role in the software development process. These characteristics benefits the developers :

1. Branching Capabilities: The feature branch and the master branch can be easily merged unlike centralized version control systems.
2. Distributed Version Control System: Each developer gets their own local repository, complete with a full history of commits. Unlike a centralized version control system, the developer doesn't require network connection to commit, or any other process.
3. Pull Requests: A pull request is a way to ask a developer to merge one of your branches into their repository. It improves the team communication around their project before integrating it into the master branch.

These characteristic features result in the faster delivery of the project to the customer/clients. It enforces "agile workflow" where the developers tend to share their progress consistently.

References:

1. https://techdifferences.com/difference-between-compiler-and-interpreter.html
2. https://git-scm.com/book/en/v2/Getting-Started-About-Version-Control
3. https://www.atlassian.com/git/tutorials/why-git#git-for-developers
4. Coursera git course