Software Development Tools

1. In your own words, describe the key aspects of the coding phase.
2. In your own words, describe the difference between a compiler and an interpreter.
3. In your own words, describe the steps in compiling and running the “Hello World” program.
4. In your own words, describe version control.
5. How are Git and GitHub alike?
6. How are Git and GitHub different?
7. In your own words, what is the Unix make command used for.

1. The key aspects of the coding phase involve Translating Design which aims to convert the structure of the blueprints and design models into executable code. Writing Source Code, which is when the developers write their code in whichever language they choose, but a specific one. Using Tools: Describes the different development tools like compilers, interpreters, debuggers, to test the code. Building Modules: Build small parts of the whole program to be integrated later. Adhering to standards: Follow coding standards and practices to run the code and communicate efficiently, can easily maintain code. Potential for AI assistance: Used more recently to refine code and assist in generating code.
2. A compiler translates a program written in source code into machine code. An interpreter produces results straight from the program, compiles and runs all in one step.
3. The Source code is represented by binary which represents ASCII characters. The preprocessor translates the source code into modified source code. The Compiler then turns the source code into assembly program. The assembler takes the assembly text and translates it into binary. Next, the linker transforms this binary into an executable program.
4. Version control is a way of organizing different versions of software based on the time it was created. Used to backtrack to a different version of the system. Lets multiple people work at the same time and then merge to the main branch.
5. Git and Github are similar because they both provide source code management and allow for easily merging and sharing code.
6. They are different in that Git is installed locally and the developer uses their local machine as a repository. There is no internet access required for Git and can be used without Git. Github is cloud based so you must have internet access. It is more user friendly and also needs Git to run.

7. Make is used to streamline the compiling process. Instead of typing all of the compile commands for compiling and naming the exe file, you would run a makefile that contains all of the commands and which files depend on each other. This means it compiles only the necessary files instead of everything every time.