Homework 1 Comp Sci-Logan Ghast

Part A: Computing Research

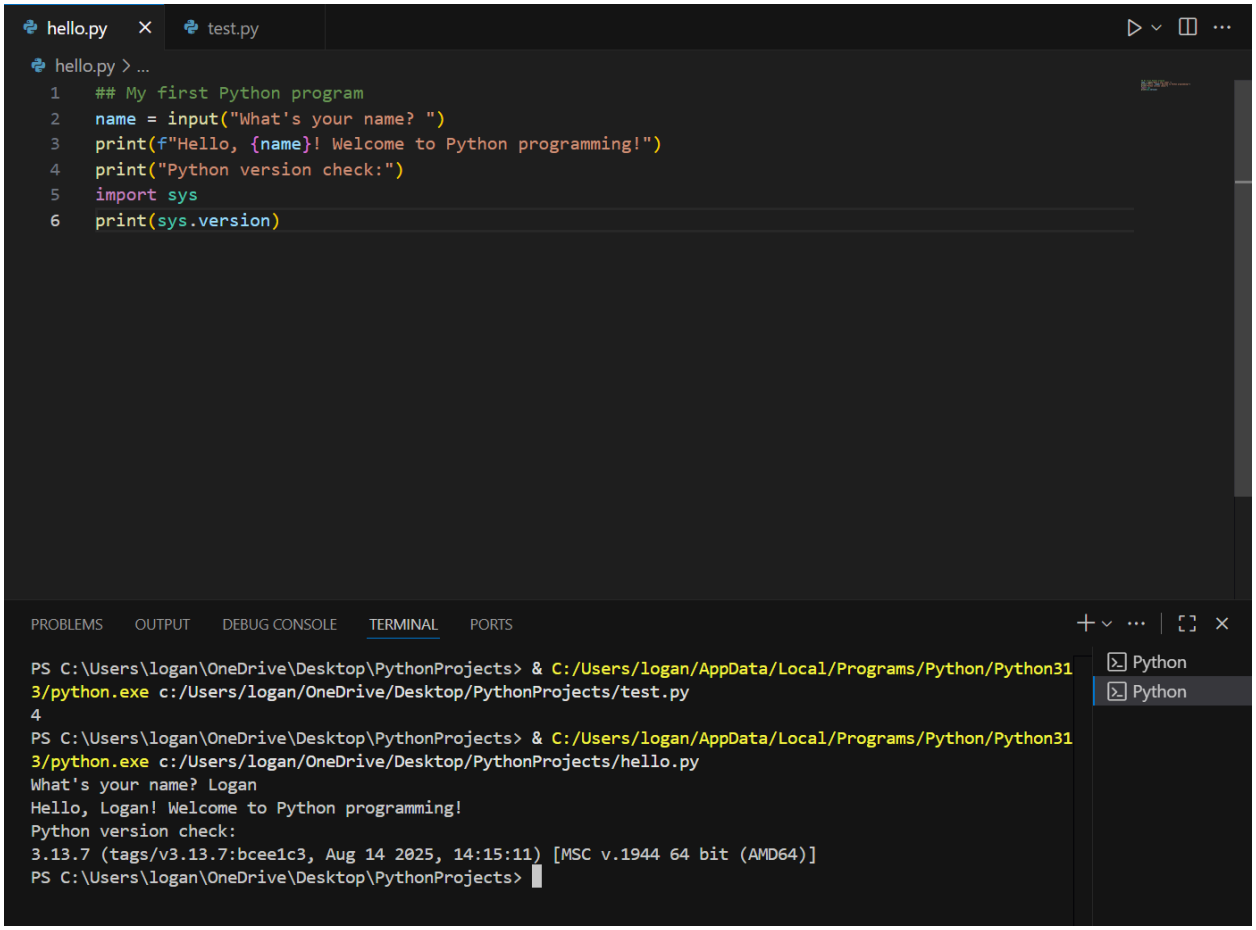
1. Computer hardware is the physical components of a computer system that you can touch and see. For example, like a keyboard, monitor, and motherboard. Computer software refers to the programs and instructions that run on the hardware like the motherboard. Software is intangible and includes operating systems, applications, and games. So in short, computer hardware is the body and computer software is the brain. Three examples of hardware are: the CPU, is the “brain of the computer”, the RAM is temporary memory and deletes after the computer turns off, and the hard drive/SSD is the long term storage. Three examples of software are: the operating system which manages hardware and software resources, the web browser is an application for accessing the internet, and lastly a word processor that is a software for creating documents. Hardware and software are interdependent. Software sends instructions to hardware and hardware executes those instructions. For example: when you type in a word processor, the keyboard sends a signal to the CPU to execute what was typed. Without hardware, the software has nothing to do, and without software, the hardware has nothing to do.

2. Three programming languages are: Python, Java, and Javascript. Python uses web development, data science, machine learning, automation, and scripting. Some of python’s strengths are: simple and readable syntax, a huge library ecosystem, and cross platform compatibility. The typical applications for python are AI and machine learning tools, web apps, and data analyzation. Some of the uses for Java are enterprise software, android apps, and backend systems. Some of its strengths include platform independence, strong object-oriented structure, and robust performance and scalability. The typical applications for Java are Android mobile apps, banking and mobile enterprise systems, and web servers and backend APIs. JavaScript uses front end development, interactive websites, and mobile apps. The strengths of JavaScript include it runs directly in browsers, enables dynamic and responsive UI, and is supported by powerful frameworks. The typical programs include interactive websites, single page applications, and mobile apps. Python is great for beginners because it’s easy to learn. The syntax is very clean and close to english so for example if you want to say “Hello World”, all you have to do is type print(“Hello World”) and it runs. It also requires a minimal setup which means you can start coding with just a basic text editor and python installed. Python is also versatile. It is used in many fields-web development, data science, automation and more. Python also has a very large community with tons of tutorials, forums, and free resources to make learning easy and simple. And lastly, it gives immediate feedback. Since it’s an interpreted language, python lets you run code instantly and see results.

3. One computing career path is a software engineer. The required skills include: proficiency in programming languages(Python, Java, C++, C#), knowledge of software development methodologies, problem solving and debugging skills, and version control systems. The typical responsibilities of a software engineer include: designing and developing as well as maintaining a software applications, collaborate with teams to define system

requirements, test and debug code to ensure functionality, and update and improve existing software. The role of programming is the core of this career. Software engineers use code to build applications, solve problems, and create a user-friendly solutions. Another career is a data scientist. The skills required for this job are: A strong foundation in statistics and mathematics, programming skills in Python or R, experience with data visualization tools, and knowledge of machine learning algorithms. The typical responsibilities include: Collecting, cleaning and analyzing large data sets, build predictive models and algorithms, communicate insights through visualization and reports, and support decision-making with data-driven strategies. The role of programming for a data scientists is that it enables them to manipulate data, build models, and automate analysis. Python is typically the main language for data science. The third career is a Cybersecurity Analyst. The required skills of a cybersecurity analyst are: Understanding of network protocols and security tools, familiarity with operating systems, programming and scripting knowledge, and analytical thinking and attention to detail. The typical responsibilities are: Monitoring systems for security breaches, conduct vulnerability assessments and penetration tests, develop and implement security protocols, and investigate and respond to cyber incidents. The role of programming for cybersecurity analysts is it helps them automate tasks, write scripts for threat detection, and analyze malicious code.

Part B:


hello.py
test.py
hello.py > ...
1 ## My first Python program
2 name = input("What's your name? ")
3 print(f"Hello, {name}! Welcome to Python programming!")
4 print("Python version check:")
5 import sys
6 print(sys.version)
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
PS C:\Users\logan\OneDrive\Desktop\PythonProjects> & C:/Users/logan/AppData/Local/Programs/Python/Python313/python.exe c:/Users/logan/OneDrive/Desktop/PythonProjects/test.py
4
PS C:\Users\logan\OneDrive\Desktop\PythonProjects> & C:/Users/logan/AppData/Local/Programs/Python/Python313/python.exe c:/Users/logan/OneDrive/Desktop/PythonProjects/hello.py
What's your name? Logan
Hello, Logan! Welcome to Python programming!
Python version check:
3.13.7 (tags/v3.13.7:bcee1c3, Aug 14 2025, 14:15:11) [MSC v.1944 64 bit (AMD64)]
PS C:\Users\logan\OneDrive\Desktop\PythonProjects>
Python
Python