**ALBAMA A & M UNIVERSITY**

**COMPUTER SCIENCE/EECS**

**CS 102: Programming – 1, Section 1**

**HOMEWORK 1: DUE DATE: 8/26/2024**

Any programming assignment must be done using visual studio or repl, and do not attach screenshot, copy and paste the program in the word document along with results.

1. Short Questions (Your answers must be brief but to the point, and best answering the questions).
2. Explain the differences between Source Program, Object Program and Executable Program. Write in your own words.

Ans: The differences between Source Program, Object Program and Executable program are in the below:

Source Program: It is the code written by the programmer in a high-level language.

Object program: It is the machine code generated by the compiler, not yet executable.

Executable program: It is the final program that can run on the computer.

1. Name at least 4 High Level Programming Languages including the one you are learning in this course.

Ans: Python, Java, JavaScript and C++.

1. What do you understand by Compilation Error and Runtime error. Explain.

Ans: I think, In Compilation Error that error detected by the compiler during code translation like syntax errors. Whereas Runtime error that errors occur while the program running like dividing by zero.

1. Name at least one system software and one application software.

Ans: Window OS and Microsoft word is the system software and one application software respectively.

1. Explain Primary memory and Secondary Memory of a Computer System.

Ans: Primary memory is the main memory like RAM, where the computer stores data and instructions that are currently in use for fast access. Whereas, Secondary memory is the storage devices like hard drives, SSDs where the data are save for permanent.

1. Identify the type of constants given below (only if you think this is a valid constant in C++), if it is an invalid constant, state why invalid.

**Data valid/invalid Type if valid Reason if invalid**

2345 valid Integer

235.67 valid float

45.67E-8 valid float

5,000 invalid numeric constants decline commas

‘C++ is fun’ invalid should be double quotes

‘\t’ valid character

1. Write a C++ Program to store the following data using proper variables and then display each of them.

* Your first and last name
* Your middle initial
* Your year of birth
* Number of Courses you are taking in this semester
* Your targeted gpa (gpa you expect to have when you graduate)
* Month you are born (not numbers in words)

Make sure to compile and run the program.

4. **Match the following terms with their definitions, given here:**

**a.** Machine language – Ans. v

**b.** Assembly language – Ans. ii

**c.** Assemble – Ans. iv

**d.** Compiler – Ans. i

**e.** Source program – Ans. vi

**f.** Object program – Ans. iii

**i.** A program that translates a high-level language into machine code.

**ii.** A low-level programming language in which a mnemonic is used to

represent each of the instructions for a particular computer.

**iii.** The machine language version of a source program.

**iv.** A program that translates an assembly language program into

machine code.

**v.** The language, made up of binary coded instructions, that is used

directly by the computer.

**vi.** A program written in a high-level programming language.

5. **Answer each of the following short questions:**

a) Define Algorithm. How is it different from a computer program? What is the relation between the two.

Ans. An algorithm is a step-by-step procedure for solving a problem with a finite amount of data  
in a finite amount of time. The difference is : An algorithm is a general plan, while a computer program is the actual code that follows that plan. The relationship between two is computer program is built based on an algorithm and the algorithm guides how the program is written and functions.

b) Which one is larger unit for memory: 1 Giga Byte (GB) or 1 Zettabyte?

Ans: 1 Zettabyte is a larger unit.

c) 1 TB = how many MB?

Ans: 1 TB = 1,000,000 MB

d) What is the most important system software without which you wont be able to launch any applications?

Ans: Operating System is the most important system software without which you wont be able to launch any applications.

e) What are the Boolean Constants?

Ans: Boolean Constants are values that represent truth value in Boolean logic. Example True, False.