CIT 3102 Fundamentals of computer programming

BIT Y1S1 Town Campus

Question one

a) Differentiate between the following programming languages. (4 marks)
   i) Low level and high level languages
   ii) Assembly language and machine code language
b) Give any two example of structured programming language. (2 marks)
c) Write a Pascal program to add two numbers then display the result. (4 marks)
d) Differentiate between a compiler and an interpreter. (2 marks)
e) Outline steps in developing a program. (6 marks)hg
f) i) Design an algorithm of a program to three numbers then display the greatest number. (4 marks)
   ii) Write a C program to implement the above algorithm in g) i). (5 marks)
g) Briefly explain the purpose of the following sections of a C program. (3 marks)
   a) Linker
   b) Documentation
   c) Definition

Question two

a) Briefly explain the purpose of the following C constructs. (6 marks)
   i) # include <stdio.h>
   ii) int main()
   iii) # define x 1000
b) Differentiate between the following C tokens. (4 marks)
   i) Variable and constant
   ii) Reserved word and identifier
c) Design a C program to input employee name, hours worked and rate per hour the calculate the basic pay =hours worked * rate per hour, tax is charged according to basic pay. If basic pay is greater that 20000, a tax of 10% of basic pay is charged, otherwise a tax of 5% is charged. Net salary = basic – tax. The program should display basic salary, tax and net salary. (6 marks)
c) Differentiate between while and do..while iteration statements. (4 marks)

Question two

a) Write a C program to display numbers in series 3,6,9,12 …18. (6 marks)
b) A company offers discount according to the amount of goods bought and credit status of a customer. When a customer buys goods worth over or equal to Ksh. 20000, a discount of 5% is issued. If goods worth between Ksh. 10000 and 1999 the customer must have good credit status to be offered with a discount of 3% otherwise no discount is issued. Use the following tools to represent the processes involved. Where input include product

name, amount of goods and credit status. Calculate discount and net price then output the result.

i) Flow chart (4 marks)

ii) C program (4 marks)

c) Write a C program to input 6 numbers to an array, add the numbers and display the sum calculated. (6 marks)

Question four

a) Write a C program to input 2 numbers then use a function to add the 2 numbers then return the answer to be displayed by the main program. (6 marks)
b) Design a flow chart of a program to input 3 numbers then display the smallest and the biggest number. (6 marks)
c) Write a C program to convert a string into upper case using inbuilt function from string.h header. (6 marks)
d) Distinguish float and double data types. (2 marks)

Question Five

a) Explain the following with regard to functions. (4 marks)
   i) User defined function
   ii) Local variable

b) A bank classifies its customers depending on period of operating and outstanding balance to issue loan. Customers are classified as shown below.

Classification	Loan type
A	Long term
B	Medium term
C	Short term
D	Below 200000

Write a program to input customer name, classification and determine Loan type using switch statement. (6 marks)

c) i) Write a pseudo code of a program to input dimension of a cylinder then calculate volume of the cylinder. Where volume = $\pi r^2 h$. (4 marks)

ii) Write a C program to represent the above pseudo code in question c i). (4 marks)
d) Differentiate between if statement and switch statement. (2 marks)