University of Eswatini

Department of Computer Science

Examination(Main)

2018/2019

SECOND SEMESTER

Title of Paper: INTRODUCTION TO COMPUTER PROGRAMMING I

Course Code: CSC112

Time Allowed: Three (3) Hours

Instructions: Answer Question one and any other three Questions.

Don't write anything on the Examination Question paper.

You are not allowed to open this paper until you have been told to do so by the invigilator.

CSC112 INTRODUCTION TO COMPUTER PROGRAMMING I

SECOND SEMESTER MAIN EXAMINATION 2018/2019

INSTRUCTION: ANSWER QUESTION ONE AND ANY OTHER THREE QUESTIONS

TIME ALLOWED: THREE HOURS

QUESTION ONE

a) Write briefly on two popular programming methodologies in C++   5Marks
b) List and explain five characteristics of a good programming language 5Marks
c) Write a C++ program to calculate a customer's bill for DSTV Eswatini. There are two types of customers: residential and business. There are two rates for calculating DSTV bill: one for residential customers and one for business customers. For residential customers, the following rates apply:
   - Bill processing fee:E18.50
   - Basic service fee:E40
   - Premium Channels:E10 per channel

For business customers, the following rates apply:

   - Bill processing fee:E80
   - Basic service fee:E130 for the first 10 connections, E20 for each additional connection
   - Premium channels:E100 per channel for any number of connections

Note: the program should ask the user for an account number(an integer) and customer code.

Input: the customers's account number, customer code, number of premium channels to which the user subscribe and in the case of business customer's, number of basic service connections

Output: customer's account number and the billing amount

15marks

QUESTION TWO

a) List five qualities of a good programmer   5marks
b) List and explain six steps for creating computer solutions to problems 6marks
c) Differentiate between the following
   i.   Compilation and run-time errors   2marks
   ii.   Local and global variables   2marks

iii. Fundamental and structured data types   2marks

iv. Implicit type coercion and explicit type conversion.   2marks

d) Write a C++ program to obtain and print on the screen of computer Next for N, Back for B and Cancel for C. If the characters N,B and C are entered from the keyboard using a switch statement   6marks

QUESTION THREE

a) List and explain ten reasons why you should learn C++   10marks

b) Write a C++ program to compute the multiplication of two matrices using a fixed loop

         10marks

c) List five rules for constructing a variable name in C++   5Marks

QUESTION FOUR

a) List and explain five tokens commonly used in C++ with the support of an example for each   7.5marks

b) Explain the rules for applying mixed expression in C++ with the support of an illustrative example   7.5marks

c) Write a C++ program for ASCII code from character to integer and from integer to character using if statement   10marks

QUESTION FIVE

a) Write a C++ program to determine the factorial of any number using pre-test loop

         10marks

b) Write a short note on the following string manipulations in C++ with the support of an example for each

i. Access characters in a string variable   3marks

ii. Searching the content of a string variable   3marks

iii. Removing characters from a string variable   3marks

iv. Replace characters in a string variable   3marks

v. Insert characters within a string variable   3marks

QUESTION SIX

a) Write a C++ program to display an output of 10characters at the same time in an output file   10marks

b) Write a C++ program to evaluate the definite integral below by trapezoidal rule using a function

$$\int_2^5 (x^5 + 3x^3 - 8x - 7)dx$$

15marks