University of Swaziland

Department of Computer Science

Examination(Supplementary)

2017/2018

Second Semester

Title of Paper: Computer Programming I

Course Code: CSC112

Time Allowed: Three (3) Hours

Instructions: Answer any **four 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 COMPUTER PROGRAMMING I (SUPPLEMENTARY EXAM.)
SECOND SEMESTER 2017/2018 SESSION
INSTRUCTION: ANSWER ANY FOUR QUESTIONS
TIME ALLOWED: THREE (3) HOURS

QUESTION ONE
    a) Write a C++ program that reads a student name followed by ten examination scores. The program should output the student name, the ten examination scores and the average of the examination scores. Output the average examination score with one decimal place. The data to be read is stored in a file called exam.txt and the output should be in a file called examaverage.out.   15marks
    b) Write a short note on the following output manipulators
    i.   Setw
    ii.   Setprecision
    iii.   Showpoint
    iv.   Fixed
    v.   setfill   10marks

QUESTION TWO
    a) Differentiate between the following
    i.   cin and getline
    ii.   endl and \n
    iii.   ifstream and ofstream
    iv.   value-returning and void functions
    v.   value and reference parameter
        10marks
    b) Write a C++ program to compute and output the penalty on an unpaid credit card balance using a selection statement. The program assumes that the interest rate on the unpaid balance is 3% per month.   10marks
    c) Write short note on the following with the support of an example
    i.   strcmp
    ii.   strcat
        5marks

QUESTION THREE
    a) What is the output of this C++ code fragment?

```
int X=15;
int Y=3;
if (X+Y>17 || Y-X<20)
{
  Y=X-Y;
  X=Y+X;
  cout<<X<<" "<<Y<<" "<<X+Y<<" "<<X-Y<<endl;
}
else
{
  X=Y-X+Y%5
  cout<<X<<" "<<Y<<" "<<X-Y<<" "<<X+Y<<endl;
}
```

        10marks

b) Write a C/C++ program that prompts the user to input an integer between 0 and 35. If the number is less than or equal to 9, the program should output the number; otherwise, it should output A for 10, B for 11, C for 12, ... and Z for 35.   10marks
c) Write short note on the following with the support of an example each
   i.   strcpy
   ii.   strlen
                                                                    5marks

QUESTION FOUR
   a) David needs to lower his cholesterol count to stay physically fit and reduce the risk of heart attack, and he wants to accomplish this by doing regular exercises. He decided to join a gym and, among other measures, keep a count of the number of calories burned each time he uses the gym. At the end of each week he wants to determine the average number of calories burned each day. Write a C++ program that David can use to enter the number of calories burned each day and calculate the average of calories burned each day using a while loop. Suppose that the numbers of calories burned each day in a particular week are 215, 325, 200,430, 305, 518 and 605.   15marks
   b) How does backtracking help in program debugging? Considering **N-Queens Problem:** Given a chess board having cells, we need to place queens in such a way that no queen is attacked by any other queen. A queen can attack horizontally, vertically and diagonally.   10marks

QUESTION FIVE
a) Write a C++ program to generate the first ten Fibonacci numbers using a do... while loop   15marks
b) Differentiate between the following
   i.   Reserved word and a user-defined identifier   2marks
   ii.   int data type and double data type   2marks
   iii. single line comment and multiple line comment   2marks
   iv.   str.length() and strlen()   2marks
   v.   strncmp() and strcmp()   2marks

QUESTION SIX
   a) Write a C++ program to find the largest of a set of 10 numbers using a function
      15marks
   b) Write C++ statements that accomplish the following:
      i.   Declare integer variables a and b. initialize a to 25 and b to 18   2marks
      ii.   Suppose x and y are double variables. Output the contents of x,y and the expression x + 12 / y-18   2marks
      iii. Declare integer variables num1 and num2 and Input the first number in num1 and the second number in num2   2marks
      iv.   Assign the value of 15 times feet plus inches to totalinches   2marks
      v.   Update the value of an integer variable x by adding 10 to it   2marks

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