Sri Lanka Institute of Information Technology

B.Sc. Degree
in
Information Technology

Midterm Examination
Year 1, Semester 1 (2017)
June Intake

Introduction to Programming (C / C++) (N102)

Duration: 1 Hour

Instructions to Candidates:

- This is a closed book examination.
- This paper contains 2 questions on 2 pages without the cover page.
- Answer all questions on the WORKBOOK provided.
- Read all questions before answering.
- The total marks obtainable for this examination is 30.

QUESTION ONE (Total: 16 marks)

(a) Why do we need compile the Source code? (2 marks)

(b) The loop shown below has been written by a C programmer.

```
int n = 6;
while (n < 5){
  printf("%d \n", (n * n));
  n /=2;
}
```

i. Desk check the above code till the condition is false by filling the table below.

n	n<5	Output

(2 marks)

ii. How many times the while loop get executed when the condition changed to n > 5? (1 mark)

(c) Evaluate each of the following expressions and list the final value of variable **x**. (4 marks)

i. x = 4 – (8 % 5) * 3 /(8 – 6) % 3 ;

ii. x = ((9 % 8) * 2) * 8 / 5 % (7 / 3) ;

iii. x = (5 - 2 * 9 + (3 + ((9 / 4) % 2 * 3 + 6 / (8 % 3))));

iv. x= 3 / 6 + 13 % 3 + 2;

(d) Write C statements to extract digits of the following number. You should assign each digit to a variable. (3 marks)

int number=4586731;

(e) Write only a nested if statement to print a message based on the option user has selected. The scheme is as follows. (4 marks)

char option;

Option	Message
+ or a	Add
- or s	Subtract
* or m	Multiplication
/ or d	Division
E or e	Exit

QUESTION TWO (Total: 14 marks)

(a) Write the main method of a C program to read until user enters a 3-digit integer. (5 marks)
The program outputs the number of digits in the user input.

Example 1:
Enter a 3 digit number:14
Output: 14 has 2 digits. Please enter a 3 digit number

Example 2:
Enter a 3 digit number:1456
Output: 1456 has 4 digits. Please enter a 3 digit number

Example 3:
Enter a 3 digit number:145
Output: You have entered a 3 digits number

(b) Determine the output of part **a** and **b** when;

i. x is 5 and y is 13. (3 marks)

ii. x is 11 and y is 6. (3 marks)

```
a. if (x < 10 )
     printf("AAA\n");
     printf("BBB\n");

   if (y > 10 )
     printf("CCC\n");
     printf("DDD\n");
```

```
b. if ( x<10 ) {
  if( y > 10 )
    printf("AAA\n");
    printf("BBB\n");
      }
    else {
     printf("CCC\n");
      printf("DDD\n");
    }
```

(c) Identify and correct the errors in each of the following statements. (3 marks)

1. firstnumber + secondnumber = total;

2. answer=2 ÷ X + $(z-3)^2$;

3. if(x = 1);
   printf("Equal to 1");
   z++;
  else
   printf("Not equal to 1");

---- End of Paper ----