REGENT UNVIERSITY

COLLEGE OF SCIENCE AND TECHNOLOGY

EXAMINATION PAPER

END OF SEMESTER EXAMINATIONS,
JANUARY 2007

COURSE: SICS 151: PRINCIPLES OF PROGRAMMIN
(*C LANGUAGE*)

TIME: TWO HOURS

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ATTEMPT *FOUR* QUESTIONS

. Decision making.

a. Write out the full syntax for the **`if - else`** construct in C

b. Consider the following program:

```
int a;
int x = 5;
x = x * x;
if (x > 5 || x < 25){
   a = 0;
}else{
   a = 1;
}
printf("%d\n", a);
```

State the value that will be printed to the screen.

c. Rewrite the following code using the ternary operator (?:)

```
if (x<25){
    a=0;
} else {
    a=1;
}
```

. Variables and Memory usage

a. For each of the following values, write a C variable declaration that can be used for its storage

i. 3.14128128 float

ii. 3456 long int

iii. 'c' string

b. Given the following code

```
int frequency1 = 5;
int temp, frequency2 =3;
temp = frequency1;
frequency1 = frequency2;
frequency2 = temp;
```

i. Briefly state what the code is doing

ii. Write out the final values of frequency1, frequency2 and temp after all the lines of code are executed.

c. What does the expression

```
c++;
```

mean. Give two other expressions / statements which are equivalent to the one above.

3. The C language

a. Machine Language is a First Generation Language. What Generation does the C language belong to?

b. Give two kinds of software that C can be used to program

c. Give two reasons why as a programmer learning the C language is important

d. What are the main parts of a C program

e. What is a header file? Provide a brief answer

f. Give the filenames of two standard header files

4. Logic

a. Write a C program to sum and print to the screen all odd numbers between 0 and 20. Put comments in your program

b. What is the value of num after the following statements have been executed:

```
int i, j, k, num;
i=20;
j=i++;
k=j-i;
num = k * j - i / 2;
```

5. Looping

a. A solution to a computer problem requires the repetition of a C statement an unknown number of times. What looping (iterative / repetition statement) is best to use?

b. Write out the full syntax of the looping construct you decided on in (a) above.

c. Implement the following piece of code using the **for** construct

```
int y= 5;
int finish = 100;
while (y < finish){
      y+=5;
      printf("%d\n", y);
}
```

6. The switch construct

a. Write out the full syntax for the **switch** construct in C

b. Write a C program that accepts an integer in the range 1 to 12, from the keyboard and prints out the equivalent month name. e.g. input of 1 prints January to the screen; input of 2 prints February, etc.