CS 271 Review for Exam 1

Chapter-by-Chapter Topics & Programming Problems

Chapter 1
6 phases of C program development

Chapter 2
printf statement
scanf statement
arithmetic
order of operations
assignment statement
if statement

Review problems 2.20 and 2.24

Chapter 3
if statement
if...else statement
while loop
Top-down, step-wise refinement
increment and decrement operators

Review problems 3.20, 3.23, 3.26 and 3.44

Chapter 4
for loop
switch statement
logical operators
order of operations (table on pg 135)
sentinel loop - must use a while loop as shown in class

Review problems 4.10, 4.19, and 4.31

Chapter 5
math library
math functions: sqrt, pow, abs
math constant: M_PI
function definitions
function prototypes
function calls
pass-by-value parameters

Review problems 5.23, 5.24 and 5.31

Linux Commands

pwd   mv
cd   gcc, option flags -o, -c, and -lm
mkdir   rm
cp   ls or dir

<u>**C Language Topics**</u>

You should know the general structure of a C program, including the placement of preprocessor directives, the main function, function prototypes, and other functions.

Preprocessor Directives: #include

#include <stdio.h>
#include <math.h>
#include <stdlib.h>
#include <time.h>

Operators

```
Assignment Operator     =
Relational Operators    >    <       >=      <=       ==     !=
Logical Operators       &&   ||      !
Arithmetic Operators    +    -       *       /        %
```

Declaring Variables

Types: int, long, float, double, char

Example: int x = 0, y, z;

Assignments

Example: num1 = 2.5 * 3.8;   // changes the value of num1 to 9.5

Making Decisions

```
if (condition) {
     // these statements processed if condition is true list
   }
else {
     // these statements processed if condition is false list
   }


switch (variable) {

   case value1 :
    // these statements processed if variable == value1
    // until break statement or end of switch
   case value2 :
    // these statements processed if variable == value2
    // until break statement or end of switch
    .
    .
    .
   default :
    // these statements processed if variable does not match
    // any of the cases listed above
}
```

Repeating Groups of Statements

```
while (condition) {
     // these statements processed repeatedly while condition is true list
     // condition can be numeric.  0 = false  any other number = true list
}

for (initialization; condition; increment) {
     // these statements processed repeatedly while condition is true list
}
```

Input and Output

scanf("control string here", addresses of variables here); - used for input

printf("control string here", values or variables here); – used for output

getchar( ) - used for inputting one character

EOF – defined constant in stdio.h. On most systems EOF = -1

Control String Placeholders and Control Characters

```
%d     integer
       %#d - specify field width for integer output
%f     float
       %#.#f - specify field width and number of decimal places for
              floating point output
%lf    double (used in scanf only)
%c     character
%s     string (character array terminated by the null character)
\n     newline
```