1. (10 points) State whether each of the following statements is true or false. If false, explain why.

   a) Declarations can appear anywhere in the body of a function.

   b) The equality operators (e.g. ==) have higher precedence level than the relational operators (e.g. <).

   c) Every C statement ends with a period.

   d) A switch statement will not compile without a default case.

   e) The expression \((x > 1 \text{ || } y < 0)\) is true if \(x > 1\) is true and \(y < 0\) is true.

2. (10 points) Fill in the blanks in each of the following:

   a) All programs can be written in terms of the three control structures: ____________, ____________, and repetition.

   b) When executed in a repetition structure, the ____________ statement, causes the next iteration of the loop to be performed immediately, and the ____________ statement causes an immediate exit from the current loop.

   c) A special value used to indicate the “end of data entry” is called a ____________ or a ____________ value.

   d) Variable names in C may not begin with a ____________ or a ____________.

   e) Use a ____________ or ____________ loop for event-controlled repetition.
3. (15 points) Evaluate the following expressions and show all your work:

   a) (2 points) Given an integer \( b = 3 \), what is the numeric value of “\( !b \)”?

      \( \!b = \) 

   b) (2 points) Given integers \( b, c, \) and \( d \), where \( c = 2, d = 3 \). What is the value of \( b \) after the following assignment?

      \( b = d/c \) ;

   c) (2 points) Given integers \( a, b, c, \) and \( d \), where \( a = 2, b = 3, c = 4 \). What is the value of \( d \) after the following assignment?

      \( d = 1 + a * b \% c \) ;

   d) (4 points) Given integers \( b, c, \) and \( d \), where \( b = 3, c = 4, d = 5 \). What are the values of all these variables after executing the following statement?

      \( b *= c = d + 2 \) ;

   e) (5 points) Given integers \( a, b, c, d \) and \( e \), where \( a = 2, b = 3, c = 4, d = 5 \). What are the values of all these variables after the following statement?

      \( e = --b / c + a * d++ \) ;
4. (20 points) Write C statements that do the following:
   a) Print the following text:
      
      \[
      \% : \text{ for modulus calculation.}
      \]

   b) Given \(a\) is a floating variable, \(b\) and \(c\) are integer variables. Input \(a\), \(b\), and \(c\) from the keyboard using scanf.

   c) Write a ‘for’ statement that prints the sequence of values: “30 28 26 24 22 20”.

   d) Write a ‘switch’ statement to test whether an integer value, \(x\), is an even or odd number. If \(x\) is 3, the printed text should look like “\(x = 3\) is an odd integer”. If \(x\) is 4, the printed text should look like “\(x = 4\) is an even integer”.
5. (15 points) What is the output of the following code:

a) Assume that the next input line contains the "1 2 3".

```c
int a = 4;
int b;
int c;
printf("Enter three integers:\n");
scanf("%d,%d,%d", &a, &b, &c);
printf("a = %d\nb = %d\nc = %d\n", a, b, c);
```

b) For (i = 1; i < 3; i++) {
    for (j = 1; j < 4; j++) {
        if (j % 2 == 0) {
            printf("X") ;
        } else {
            printf("O") ;
        }
    }
    printf("\n") ;
}
printf("Done.\n") ;

c) For (i = 1; i < 6; i++) {
    if (i == 3) {
        continue ;
    }
    printf("%d\n", i) ;
}
printf("Done.\n") ;
6. (30 points) Identify and correct errors in each of the following C code fragments:

a) ```c
   */ printf("x + y = %d, x + y ) */
```

b) ```c
   if (number => largest );
   largest == number ;
```

c) ```c
   counter = 2;
   Do {
      if ( counter % 2 == 0)
         printf( "%d\n", counter);
         counter += 2;
   } While (counter < 100) ;
```

d) ```c
   While ( y > 0 ) {
      printf ("%d\n", y );
      ++y;
   }
```
e) Assuming that the next input line contains “100 A”, the code fragment below should print the following text:

```
Integer is 100
Character is A

scanf("%d", &intVal);
charVal = getchar();
printf("Integer: %d\nCharacter: %c\n", intVal, charVal);
```

f) `for (f = 0.00001; f <= 0.0001; f += 0.00001)`

```
printf("%.6f\n", f);
```