**Extra Practices 6**

***Theoretical Questions***

1. What would be printed from each f the following program segments?

a.

*x=12;*

*while (x>7)  
 printf(“%d\n”,x);*

*b.*

*for (x=12; x>7;)*

*printf(“%d\n”,x);*

*c.*

*x=12;*

*do*

*printf(“%d\n”,x );*

*while (x>7);*

1. What would be printed for each of the following segments? Compare and contrast your answers to parts a, b, and c.

*a .*

*x=12;*

*while (x<7){*

*printf (“%d\n”);*

*x--;*

*} //while*

*b.*

*for (x=12;x<7;x--)*

*printf (“%d\n”,x);*

***----part c is in the next page***

*c.*

*x=12;*

*do*

*{  
 printf (“%d\n”, x);*

*x--;  
 }while (x<7);*

1. Change the following while loops to for loops.
   1. *x=0;  
      while (x<10){  
       printf (“%d\n”,x);*

*x++;   
}*

*b.  
 scanf(“%d”,&x);  
 while(x!=9999){  
 printf (“%d\n”,x);  
 scanf(“%d”,&x);*

*}*

1. Change the *while* loop in exercise 3 to do-while loops.
2. **\*\*Challenge:** What will be printed from the following program segments?
   1. *for (x=1;x<=20; x++){*

*for (y=1;y<x;y++)  
 printf(“ ”);  
 printf(“%d\n”,x);  
 }*

* 1. *for (x=20;x>=1;x--){  
      for (y=x; y>=1;y--)  
      printf(“ ”);*

*printf (“%d”, x);  
}*

***\*\*Questions marked challenge are those which need an extra bit of creativity or mathematical background: Ask if you would like to learn how to solve them***

***Programming Questions***

1. Create a program that will compute the voltage (V) drop across a resistor (R) for a **range of**   
current (I) values selected by the program user. The program user is to input the value of the resistor, the beginning and ending current values, and the incremental value of the current. The relationship between the resistor voltage and current is given by

**V= I\* R**

2. \*\***Challenge:** Let n be a positive integers consisting of up to 4 digits, d5 d4 d3 d2 d1. Write a program to list in one column each of the digits in the number n (which will be asked from the user). The right most digit, d1, should be listed at the top of the column.

**Hint: If n is 3704 , what is the value of the digit when computed by using**

**digit=n%10.**

3. Write a complete c program that keep asking the user for an integer number (name the variable **value**) and prints that number and the square root of that number (with two decimal precision). The program ends and prints a parting message when the user enters a negative number which acts as a stopping value.

A TYPICAL RUN WOULD LOOK LIKE THIS (IN BOLD IS USER INPUT):

Enter a positive number: **16**

The square root of 16 is: 4.00

Enter a positive number: **100**

The square root of 100 is 10.00

Enter a positive number: **-5**

Goodbye.

4. Write a program that reads **n** integer data from the standard input and prints a list of the numbers followed by the minimum integer read, maximum integer read, and the average of the list. Test your program with the data shown below:   
{24 7 31 -5 64 0 57 -23 23 7 63 31 15 7 -3 2 4 6}

**(---n in the question above is to be entered by the user)**

1. Write s function that creates the following pattern, given the height (number of rows) and the width (asterisks per row). **User enters height and width.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*  
\*\*\*\*\*\*\*\*\*\*\*\*\*  
\*\*\*\*\*\*\*\*\*\*\*\*\*  
\*\*\*\*\*\*\*\*\*\*\*\*\*  
\*\*\*\*\*\*\*\*\*\*\*\*\***

1. Write a function that creates the following pattern, given the height (number of rows) and the width (print characters per line). **User enters height and width.**   
     
   =========  
   \* \*  
   \* \*  
   \* \*  
   \* \*

=========

1. **\*\*Challenge:** Write a program that creates the following pattern:  
   **1 2 3 4 5 6 7 8 9  
   1 2 3 4 5 6 7 8  
   1 2 3 4 5 6 7  
   1 2 3 4 5   
   1 2 3 4   
   1 2 3   
   1 2   
   1**
2. Write a program that will prompt the user to enter their **full name** and shows the following menu to the user until the user selects option (**c. Exit**):
3. Average of 10 floating point numbers
4. Highest among 10 odd integer numbers
5. Exit

If the user selects option **a** he will promoted to enter 10 floating point numbers and find their average and display the result on the output.

If the user selects option **b** he will be prompted to enter 10 odd integer numbers, the highest will be determined and shown on the output. **(note: You must check to make sure that in this case the 10 numbers are each odd otherwise show an appropriate message to the user and ask him to re-enter the number. )**

If selects option **c** you program will display the following message and will end:

Thank you **Jason Smith.**

**(note: Jason smith is just an example full name.)**