ECE 532

TUTORIAL 2 (WEEK 2)

1. Define a struct, checkingAccount, to store the following data about a checking account : account holder's name (string), account number (int), balance(double), and the interest rate (double).
2. Assume the definition Question 13. Declare a checkingAccount variable and write C++ statements to store the following information: account holder's name-Jason Miller, account number-17328910, balance-24476.38, interest rate-2.5%.
3. Suppose that you have the following definitions:

```
struct timeType
{
        int hr;
        double min;
        int sec;
};
```

```
struct tourType
{
        string cityName;
        int distance;
        timeType travelTime;
};
```

   a. Declare the variable destination of type tourType.
   b. Write C++ statements to store the following data in destination: cityName-Chicago, distance-550 miles, travelTime-9 hours and 30 minutes.
   c. Write the definition of a function to output the data stored in a variable of type tourType.
   d. Write the definition of a value-returning function that inputs data into a variable of type tourType.
   e. Write the definition of void function with a reference parameter of type tourType to input data in a variable of type tourType.
4. Define a struct, movieType, to store the following data about a movie: movie name (string), movie director (string), producer (string), the year movie was released (int) and number of copies in stock. Then write a program that declares a variable of type movieType, prompts the user to input data about a movie, and outputs the movie data.

5. Consider the following function prototypes:

```
int test(int, char, double, int);
double two(double, double);
char three(int, int, char, double);
```

   Answer the following questions.
   a. How many parameters does the function test have? What is the type of the function test?
   b. How many parameters does function two have? What is the type of the function two?
   c. How many parameters does function three have? What is the type of the function three?
   d. How many actual parameters are needed to call the function test? What is the type of each actual parameter, and in what order should you use these parameters in a call to the function test?
   e. Write a C++ statement that prints the value returned by the function test with the actual parameters 5, 5, 7.3, and 'z'.

6. What is the output of the following program?

```
#include <iostream>
using namespace std;
int mystery(int x, int y, int z);
int main( )
{     cout<<mystery(7, 8, 3)<<endl;
      cout<<mystery(10,5,30) <<endl;
      cout<<mystery(9,12,11) <<endl;
```

```
      cout<<mystery(5,5,8) <<endl;
      cout<<mystery(10,10,10) <<endl;
      return 0;}
      int mystery(int x, int y, int z)
{     if(x<=y&&x<=z)
      return (y+z-x);
      else if(y<=z && y<=x)
      return (z+x-y);
      else
      return(x+y-z);
}
```

7. Consider the following program:

```
#include <iostream>
#include<cmath>
#include<iomanip>
using namespace std;
void traceMe (double x, double y);
int main( )
{     double one, two;
      cout<< " Enter two numbers: " ;
      cin>>one>>two;
      cout<<endl;
      traceMe(one, two);
      traceMe(two, one);
      return 0;
}
      void traceMe ( double x, double y)
{     double z;
      if(x!=0)
            z=sqrt(y)/x;
      else
      {           cout<<"Enter a nonzero number:  " ;
            cin>>x;
            cout<<endl;
            z=floor(pow(y,x));
      }
      cout << fixed <<showpoint<<setprecision( 2);
      cout<<x<<" ,"<<y<<" ,"<<z<<endl;}
```

a. What is the output if the input is 3 625?
b. What is the output if the input is 24 1024?
c. What is the output if the input is 0 196?

8. Consider the definition of the function main.

```
int main( )
{     int x, y;
      char z;
      double rate, hours;
      double amount;
      ….
```

... . }

The variables x, y, z, rate, and hours referred to in items a through f below are the variables of the function main. Each of the functions described must have the appropriate parameters to access these variables. Write the following definitions:

a. Write the definition of the function initialize that initializes x and y to 0 and z to the blank character.
b. Write the definition of the function getHoursRate that prompts the user to input the hours worked and rate per hour to initialize the variables hours and rate of the function main.
c. Write the definition of the value-returning function payCheck that calculates and returns the amount to be paid to an employee based on the hours worked and rate per hour. The hours worked and rate per hour are stored in the variables hours and rate, respectively, of the function main. The formula for calculating the amount to be paid is as follows: For the first 40 hours, the rate is the given rate; for hours over 40, the rate is 1.5 times the given rate.
d. Write the definition of the function printCheck that prints the hours worked, rate per hour, and the salary.
e. Write the definition of the function funcOne that prompts the user to input a number. The function then changes the value x by assigning the value of the expression 2 times the(old) value of x plus the value of y minus the value entered by the user.
f. Write the definition of the function nextChar that sets the value of z to the next character stored in z.
g. Write the definition of a function main that tests each of the functions.

9. Write a function that takes as a parameter an integer (as a long value) and returns the number of odd, even, and zero digits. Also write a program to test your function.