Practice Midterm #2(Closed book and closed notes)

1. (a) What output values are displayed by the following `while` loop for a data value of 5? Of 6? Of 7?

```
printf("Enter an integer>" );
scanf("%d",&x);
product = x;
count = 0;
while (count < 4){
    printf("%d\n",product);
    product *= x;
    count += 1;
}
```

   (b) In general, for a data value of any number n, what does this loop display?

2. Evaluate the following expressions if `x` is `10.5`, `y` is `7.2`, `m` is `5`, and `n` is `2`. The value of the character 'A' is 65.
   (a) `x / ((double) m)` (b) `x / m`
   (c) `(double)(n * m)` (d) `(double)(n / m ) + y`
   (e) `(int)'D' - (int)'A'` (f) `(char)((int)'C'+2)`

3. Write a function to dispense change. The user enters the amount due. The program determines how many dollars, quarters, dimes, nickels, and pennies should be given as change. Write a function with four outputs paramters that determines the quantity of each kind of coin.

4. (a) Declare an enumerated type `month_t` and rewrite the following `if` statement, assuming that `cur_month` is type `month_t` instead of type `int`. (b) Write the equivalent `switch` statement.

```
if (cur_month == 1)
    printf("Happy New Year\n");
else if (cur_month == 6)
    printf("Summer begins\n");
else if (cur_month == 9)
    printf("Back to school \n");
else if (cur_month == 12)
    printf("Happy Holidays\n");
```

5. Write a program that determins which player(s) have three in a row horizontally in a file that contains a tic-tac-toe board. Your program must contain two functions besides `main`: (1) `read_file` will ask for a filenames, and then read the information from the file into a two-dimensional array of chars; and (2) `check_player()` takes two dimensional array, and a player's char ('`X`' or '`O`') and returns true of that character fill a row. You must always use nested for-loop to access the array. *Remember to include all necessary header files. Comments are unnecessary.*

```
[...@pc...] cat tictactoe1.txt
XXX
OOX
OXO
[...@pc...] a.out
Enter the name of input file > tictactoe1.txt
X won.
```

```
[...@pc...] cat tictactoe2.txt
XOX
OOO
XXO
[...@pc...] a.out
Enter the name of input file > tictactoe2.txt
O won.
```

```
[...@pc...] cat tictactoe3.txt
XOX
XXO
 OO
[...@pc...] a.out
Enter the name of input file > tictactoe3.txt
tie.
```

```
 [...@pc...] cat tictactoe4.txt
XOX
OOX
X O
[...@pc...] a.out
Enter the name of input file > tictactoe4.txt
tie.
```