Ryan Lopez

ENGR 213 HW 2

Part A

1. The output to the code will be:

```
x = 1
0
x = 3 2
x = 7
6
x = 13
12
x = 21
```

2. Switch statement that examines a “flag” variable and checks it against the given values

```
Flag =???
switch (flag) {
case 1 :
Printf(“HOT”);
break;

case 2 :
Printf(“LUKE WARM”);
break;

case 3 :
Printf(“COLD”);
break;

        Default:
printf(“OUT OF RANGE”);
}
```

3. For loop that calculates the sum of every third integer starting with “i=2” for all values less than 100; written 3 different ways
    a. Using a While statment

```
int i = 2;
int sum = 0;
while (i < 100) {
```

```
        sum += i;
        i += 3;
}
```

b. Using a do-while statement

```
int i = 2;
int sum = 0;
do {
        sum += i;
        i += 3;
} while (i < 100);
```

c. Using for statement

```
int i = 2;
int sum = 0;
while (i < 100) {
        sum += i;
        i += 3;
}
```

4. A loop that examines a “text” char array variable and determines how many characters are vowels and how many are consonants (assume 80 characters)

```
int vowels = 0, consonants = 0;
For (int i = 0; i < 80; i++) {
If (text[i] == 'a' || text[i] == 'e' || text[i] == 'i' || text[i] == 'o' || text[i] == 'u'){
vowels++;

        } else if ((text[i] >= 'a' && text[i] <= 'z') || (text[i] >= 'A' && text[i] <= 'Z')) {
        consonants++
        }

}
```

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Part B

1. Write a C Program to read an amount (integer value) and break the amount into the smallest possible number of bank notes. Note: The possible banknotes are 100, 50, 20, 10, 5, 2 and 1.

HW2_Q1.c > ...

```c
/*////////////////////////////////////////////
//   Title:         HW2_Q1.c
//   Author:        Ryan L.
//   Description:   C program that splits the given integer value into the smallest amount of bank notes
(Note: possible notes include 100, 50, 20,10, 5, 2, 1)
*////////////////////////////////////////////
#include <stdio.h>

int main(){
    // Declare variables (test case: 375)
    int num = 0, i=0;
    int notes[7] = {100, 50, 20, 10, 5, 2, 1};

    // Initialize variables
    printf("Input the amount: ");
    scanf("%d", &num);

    //Work
    for (i = 0; i < 7; i++) {
        printf("%d Note(s) of %d.00\n", num / notes[i], notes[i]);
        num = num % notes[i];
    }
    return 0;
}
```

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2. Write a program in C to display the sum of the series [1+x+ x^2/2! + x^3/3! +....]

HW2_Q2.c > ...

```c
/*////////////////////////////////////////////
//   Title:         HW2_Q2.c
//   Author:        Ryan L.
//   Description:   C program to calulate the sum of a reaccuring series [(x^n)/n!] and print the result
*////////////////////////////////////////////
#include <stdio.h>
#include <math.h>

int main(){
    // Declare variables (test case: 3 5 (16.375000))
    int n;
    double x, fac=1, sum = 0;

    // Initialize variables
    printf("Input the value of x: ");
    scanf("%lf", &x);
    printf("Input the number of terms: ");
    scanf("%d", &n);

    //Work
    for(int i = 0; i < n; i++){
        fac *= (i>0)?i:1;
        sum += pow(x,i)/fac;

    }
    printf("%lf",sum);
    return 0;
}
```