CS 100 Lab Nine – Fall 2017

Create a directory called **lab9** on your machine using **mkdir lab9** and complete the program **lab9.c** shown below. You must write the three functions shown in red (**printPoly**, **evaluate**, **terms**). The code below can be downloaded from the course Blackboard site.

```
#include <stdio.h>
#include <math.h>
#include <stdlib.h>
typedef struct poly {
        double coeff;
        int degree;
        struct poly *next;
} Poly;
void printPoly(Poly *);
double evaluate(Poly *, double);
int terms(Poly *);
int main(void) {
     Poly *myPoly = NULL;
     printf("Enter the coefficient and degree of a term to add to the polynomial : ");
     double c;
     int d;
     scanf("%lf %d", &c, &d);
     while ( ! ( fabs(c-0.0) < 0.00001 ) || d !=0 ) {
           // add at front
           Poly *newNode = malloc( sizeof(Poly) );
           newNode->coeff = c;
           newNode->degree = d;
           newNode->next = myPoly;
           myPoly = newNode;
           printf("Enter a coefficient and degree (or 0 0 to stop adding terms) : ");
           scanf("%lf %d", &c, &d);
     }
     printf("\n\n");
     printf("The polynomial is : ");
     printPoly(myPoly);
     printf("\n\n");
     printf("The polynomial has %d terms\n\n", terms(myPoly) );
     printf("Polynomial evaluation - enter a value for x : ");
     double x;
     scanf("%lf", &x);
     printf("\tThe value of the polynomial at x=%lf is %lf\n", x, evaluate(myPoly, x) );
     return 0;
}
```

A sample execution of this program is shown below

```
Enter the coefficient and degree of a term to add to the polynomial : 0.5 0
Enter a coefficient and degree (or 0 0 to stop adding terms) : 1.5 1
Enter a coefficient and degree (or 0 0 to stop adding terms) : 2.5 2
Enter a coefficient and degree (or 0 0 to stop adding terms) : 3.5 3
Enter a coefficient and degree (or 0 0 to stop adding terms) : 0 0


The polynomial is : 3.500000 x^3 + 2.500000 x^2 + 1.500000 x^1 + 0.500000 x^0

The polynomial has 4 terms

Polynomial evaluation - enter a value for x : 5
        The value of the polynomial at x=5.000000 is 508.000000
```

Submit your lab

First, on your local machine, compress your **lab9** directory into a single (compressed) file.
Second, once you have a compressed file that contains your **lab9** directory, submit that file to Blackboard.