CSE108
LW 04

- **Using mobile phones, flash disks, internet and any other record or communication media is strictly forbidden during lab sessions. Throughout a lab session, all such media must be kept turned off and in a closed environment. Violation of this rule is punished with a grade 0, -100 or worse. Before doing anything else, make sure that your computer is not attached any such media.**
- **Make sure that you have deleted all of your work PERMANENTLY before leaving the first sessions.**

PART-I Print Term(1 Point)

Write a C program that test a function prints a term of a polynomial . The program takes the two integers as a coefficient "**coef**" and degree of the equation "**deg**", and one character for representing the value "**X**" from console.

$$A*X^B = A * \underbrace{X * X *......*X}_{B\ times} \quad : A: coefficient\ \ B: degree$$

The prototype of the function should be like that;

 void print_term(int coef , int deg , char x)

for example;   print_term(8,6,'X') should prints ;

    8*X*X*X*X*X*X

PART-II Evaluate The Term(1 Point)

Write a C program that evaluates a term of a polynomial . The program takes the three integers as a coefficient "**coef**" and degree "**deg**" , and the value of variable "**var_value**" of the equation from console in main(). You must use following function in your program.

int eval_term(int coef , int deg, int var_value) returns the result of the term with a given value.

for example;   eval_term(8,6,4) should return 32768

Note; You 're not allowed to use math.h library and pow() function.

PART-III Print and Evaluation of Polynomial (3 Point)

 You will write a complete program for evaluating a polynomial equation with a value given by user. In this part, firstly, you will need preparing a text document that has the coefficients and the degrees of an equation. **Note that this file may have any number of lines.** Secondly, you will take the value of the variable "**var_value**" from the user in main(). And then, you will read the coefficients and degree values from the file respectively. In your program, you

will use the following function.

int   eval_print_polynomial(int var_value   , FILE* file)   returns the result of the polynomial and prints the polynomial. Use the functions you defined in the previous parts in this function. You will not print the evaluated value in this function.

2 5 4 3 6 7

Enter a value for evaluation of the polynomial :   5
 	
  f(5)= 2*x*x*x*x*x
      +4*x*x*x
      +6*x*x*x*x*x*x*x
      =475500

PART-VI Derivative of Term (1 Point)

In this part, You will write a C program that test a function to take the derivative of a term. The program takes the two integers as a coefficient "**coef**" and degree of the equation "**deg**", and one character for representing the value "**X**" from console. The following function will be used :

 void   der_term(int coef , int deg , char x)

 Example: der_term(8,9,'X') should prints ;

   72*X*X*X*X*X*X*X*X

BONUS PART-V Taking Derivatives of Term Until A Constant (2 Point)

In the bonus part, you will write a function to take the derivatives of a term until you get a constant number. Again , The program takes two integers as a coefficient "**coef**" and degree of the term "**deg**", and one character for representing the variable (e.g "**X**") from console.

The prototype of the function will be like that;
 void   der_term_until_cons(int coef , int deg , char x)

 sample example; der_term_until_cons(8,9,'X') should prints

*f= 8*X*X*X*X*X*X*X*X*X*
*f'=72*X*X*X*X*X*X*X*X*
f''=576 X*X*X*X*X*X*X*
*f'''=4032*X*X*X*X*X*X*
*f''''=24192*X*X*X*X*X*
*f'''''=120960*X*X*X*X*
*f''''''=483840*X*X*X*
*f'''''''=1451520*X*X*
*f''''''''=2903040*X*
f'''''''''= 2903040