ASSIGNMENT#3

***Data Structures & Algorithms***

***WAQAS ASHIQ***

***BCS-F11-201***

***SECTION C***

***SUBMITTED TO: Sir DR.Ghulam Rasool***

***Adding Two Polynomials***

***Code:***

**#include<stdio.h>**

**#include<malloc.h>**

**struct link{**

**int coeff;**

**int pow;**

**struct link \*next;**

**};**

**struct link \*poly1=NULL,\*poly2=NULL,\*poly=NULL;**

**void create(struct link \*node)**

**{**

**char ch;**

**do**

**{**

**printf("\n Enter Coefficent:");**

**scanf("%d",&node->coeff);**

**printf("\n Enter power:");**

**scanf("%d",&node->pow);**

**node->next=(struct link\*)malloc(sizeof(struct link));**

**node=node->next;**

**node->next=NULL;**

**printf("\n Continue(Y/N):");**

**ch=getch();**

**}**

**while(ch=='y' || ch=='Y');**

**}**

**void show(struct link \*node)**

**{**

**while(node->next!=NULL)**

**{**

**printf("%dx^%d",node->coeff,node->pow);**

**node=node->next;**

**if(node->next!=NULL)**

**printf("+");**

**}**

**}**

**void polyadd(struct link \*poly1,struct link \*poly2,struct link \*poly)**

**{**

**while(poly1->next && poly2->next)**

**{**

**if(poly1->pow>poly2->pow)**

**{**

**poly->pow=poly1->pow;**

**poly->coeff=poly1->coeff;**

**poly1=poly1->next;**

**}**

**else if(poly1->pow<poly2->pow)**

**{**

**poly->pow=poly2->pow;**

**poly->coeff=poly2->coeff;**

**poly2=poly2->next;**

**}**

**else**

**{**

**poly->pow=poly1->pow;**

**poly->coeff=poly1->coeff+poly2->coeff;**

**poly1=poly1->next;**

**poly2=poly2->next;**

**}**

**poly->next=(struct link \*)malloc(sizeof(struct link));**

**poly=poly->next;**

**poly->next=NULL;**

**}**

**while(poly1->next || poly2->next)**

**{**

**if(poly1->next)**

**{**

**poly->pow=poly1->pow;**

**poly->coeff=poly1->coeff;**

**poly1=poly1->next;**

**}**

**if(poly2->next)**

**{**

**poly->pow=poly2->pow;**

**poly->coeff=poly2->coeff;**

**poly2=poly2->next;**

**}**

**poly->next=(struct link \*)malloc(sizeof(struct link));**

**poly=poly->next;**

**poly->next=NULL;**

**}**

**}**

**int main()**

**{**

**char ch;**

**do{**

**poly1=(struct link \*)malloc(sizeof(struct link));**

**poly2=(struct link \*)malloc(sizeof(struct link));**

**poly=(struct link \*)malloc(sizeof(struct link));**

**printf("\n Enter 1st number:");**

**create(poly1);**

**printf("\n Enter 2nd number:");**

**create(poly2);**

**printf("\n \*1st Number\*");**

**show(poly1);**

**printf("\n \*2nd Number\*");**

**show(poly2);**

**polyadd(poly1,poly2,poly);**

**printf("\n Added polynomial:");**

**show(poly);**

**printf("\n Add two more numbers:");**

**ch=getch();**

**}**

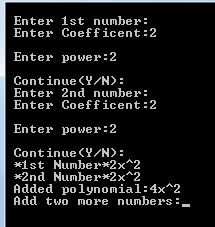
**while(ch=='y' || ch=='Y');**

**getch();**

**return 0;**

**}**

***OUTPUT:***

******

***Insertion & Deletion In Double Linklist***

***Code:***

**#include<stdio.h>**

**#include<stdlib.h>**

**typedef struct Node**

**{**

**int data;**

**struct Node \*next;**

**struct Node \*prev;**

**}node;**

**void insert(node \*pointer, int data)**

**{**

**/\* Iterate through the list till we encounter the last node.\*/**

**while(pointer->next!=NULL)**

**{**

**pointer = pointer -> next;**

**}**

**/\* Allocate memory for the new node and put data in it.\*/**

**pointer->next = (node \*)malloc(sizeof(node));**

**(pointer->next)->prev = pointer;**

**pointer = pointer->next;**

**pointer->data = data;**

**pointer->next = NULL;**

**}**

**void delete(node \*pointer, int data)**

**{**

**while(pointer->next!=NULL && (pointer->next)->data != data)**

**{**

**pointer = pointer -> next;**

**}**

**if(pointer->next==NULL)**

**{**

**printf("Element %d is not present in the list\n",data);**

**return;**

**}**

**node \*temp;**

**temp = pointer -> next;**

**pointer->next = temp->next;**

**temp->prev = pointer;**

**free(temp);**

**return;**

**}**

**void print(node \*pointer)**

**{**

**if(pointer==NULL)**

**{**

**return;**

**}**

**printf("%d ",pointer->data);**

**print(pointer->next);**

**}**

**int main()**

**{**

**node \*start,\*temp;**

**start = (node \*)malloc(sizeof(node));**

**temp = start;**

**temp -> next = NULL;**

**temp -> prev = NULL;**

**printf("1. Insert\n");**

**printf("2. Delete\n");**

**while(1)**

**{**

**int query;**

**scanf("%d",&query);**

**if(query==1)**

**{**

**int data;**

**printf("Enter The Data:");**

**scanf("%d",&data);**

**insert(start,data);**

**printf("The list is ");**

**print(start->next);**

**printf("\n");**

**}**

**else if(query==2)**

**{**

**int data;**

**printf("Enter The Data To be Deleted:");**

**scanf("%d",&data);**

**delete(start,data);**

**printf("The list is ");**

**print(start->next);**

**printf("\n");**

**}**

**}**

**getch();**

**return 0;**

**}**

***OUTPUT:***

