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*\****Assignment 2\***

**\*Insertion & Deletion From Linklist\***

**Code:**

**#include<stdio.h>**

**struct link**

**{**

**int item;**

**struct link \*next;**

**};**

**typedef struct link node;**

**void addfirst();**

**void addlast();**

**void addmid();**

**void delfirst();**

**void dellast();**

**void delmid();**

**void display();**

**node \*head=NULL;**

**int main()**

**{**

**int ch;**

**//clrscr();**

**do**

**{**

**printf("\nSINGLY LINKED LIST OPERATIONS\n");**

**printf("\n1.Addfirst\n2.AddMid\n3.AddLast\n4.DeleteFirst\n5.DeleteMiddle\n6.DeleteLast\n7.Display\n8.Exit\n");**

**printf("Enter your option:\t");**

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

**switch(ch)**

**{**

**case 1:**

**addfirst();**

**display();**

**break;**

**case 2:**

**addmid();**

**display();**

**break;**

**case 3:**

**addlast();**

**display();**

**break;**

**case 4:**

**delfirst();**

**display();**

**break;**

**case 5:**

**delmid();**

**display();**

**break;**

**case 6:**

**dellast();**

**display();**

**break;**

**case 7:**

**display();**

**break;**

**case 8:**

**exit(0);**

**break;**

**default:**

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

**}**

**}**

**while(ch<=8);**

**getch();**

**return 0;**

**}**

**void addfirst(){**

**node \*temp;**

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

**printf("Enter the data....\t");**

**scanf("%d",&temp->item);**

**temp->next=head;**

**head=temp;**

**}**

**void addmid()**

**{**

**int i=1,pos;**

**node \*cur=head,\*temp;**

**printf("\nEnter the position\t");**

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

**while(pos!=i+1&&cur!=NULL)**

**{**

**cur=cur->next;**

**i++;**

**}**

**if(pos==i+1)**

**{**

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

**printf("Enter the data...");**

**scanf("%d",&temp->item);**

**temp->next=cur->next;**

**cur->next=temp;**

**}**

**}**

**void addlast()**

**{**

**node \*temp,\*cur=head;**

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

**printf("\nEnter the data....");**

**scanf("%d",&temp->item);**

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

**{**

**cur=cur->next;**

**}**

**temp->next=cur->next;**

**cur->next=temp;**

**}**

**void delfirst()**

**{**

**node \*temp=head;**

**head=head->next;**

**printf("Deleted item is %d\n",temp->item);**

**free(temp);**

**}**

**void delmid()**

**{**

**int i=1,pos;**

**node \*cur=head,\*temp;**

**printf("Enter the position to be deleted\t");**

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

**while(pos!=i+1&&cur->next!=NULL)**

**{**

**cur=cur->next;**

**i++;**

**}**

**if(pos==i+1)**

**{**

**temp=cur->next;**

**cur->next=temp->next;**

**printf("Deleted item is %d\n",temp->item);**

**free(temp);**

**}**

**}**

**void dellast()**

**{**

**node \*temp,\*cur=head;**

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

**{**

**cur=cur->next;**

**}**

**temp=cur->next;**

**cur->next=NULL;**

**printf("Deleted item is %d\n",temp->item);**

**free(temp);**

**}**

**void display()**

**{**

**node \*cur=head;**

**printf("\nHead->");**

**while(cur!=NULL)**

**{**

**printf("\t%d",cur->item);**

**cur=cur->next;**

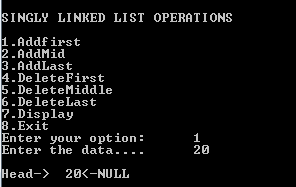
**}**

**printf("<-NULL\n");**

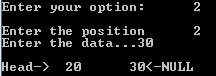
**}**

***OUTPUT:***

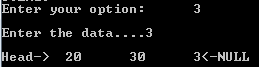
***Add At Front:***

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***Mid:***

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***Last:***

******

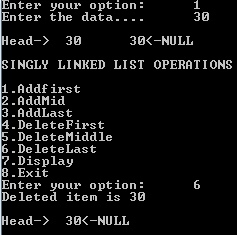
***Deletion At Start:***

******

***Mid:***

******

***Last:***

******

***\*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();**

**}**

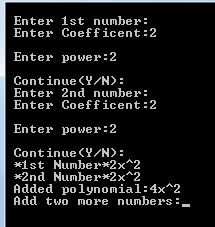
**while(ch=='y' || ch=='Y');**

**getch();**

**return 0;**

**}**

***OUTPUT:***

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***\*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");**

**}**

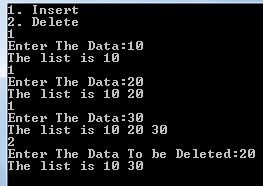
**}**

**getch();**

**return 0;**

**}**

***OUTPUT:***

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