Single linked list

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#include<stdio.h>
#include<stdlib.h>
struct node
{
	int data;
	struct node *next;
};
struct node *head = NULL;
struct node *tail = NULL;
void insertAtStart(int data)
{
	 struct node *ptr;
	 ptr = (struct node *) malloc(sizeof (struct node));
	ptr->data = data;
	if (head == NULL)
	 {
		head = ptr;
		tail = ptr;
		ptr->next=NULL;
		return;
	}
	ptr->next = head;
```

```
        head = ptr;
}
void insertAtEnd(int data)
{
         struct node *ptr = (struct node *) malloc(sizeof (struct node));
        ptr->data = data;
        ptr->next = NULL;
       if (tail == NULL)
         {
              head = ptr;
              tail = ptr;
        }
       tail->next = ptr;
        tail = ptr;
}
void insertAtPos(int pos, int data)
{
         struct node *temp;
         struct node *ptr = (struct node *) malloc(sizeof (struct node));
         int i=1;
        ptr->data = data;
        ptr->next = NULL;;
  if (head == NULL || pos == 1)
         {
```

```
        if(!head)
      {
        head = ptr;
         tail = ptr;
            return;
      }
      ptr->next = head;
      head = ptr;
      return;
}
temp = head;
while (temp)
 {
   if (pos == i + 1)
         {
            ptr->next = temp->next;
            temp->next = ptr;
            if (ptr->next == NULL)
                  tail = ptr;
            break;
      }
      i++;
      temp = temp->next;
}
```

```
    }
void deleteNode(int data)
{
    struct node *ptr, *temp;
    int res = 0;
     ptr = head;
    if (ptr->data == data)
     {
        if (ptr->next == NULL)
          {
            free(ptr);
            head = tail = NULL;
        }
        head =  ptr->next;
        free(ptr);
        return;
    }
while (ptr != NULL && ptr->next != NULL)
     {
        if (ptr->next->data == data)
          {
            temp = ptr->next;
            ptr->next = temp->next;
            if (ptr->next == NULL)
```

```
                tail = ptr;
            free (temp);
            res = 1;
        }
        ptr = ptr->next;
    }
    if (!res)
        printf("Operation failed - Give data unavailable in list\n");
}
void deleteList()
{
    struct node *ptr;
    ptr = head;
    while (ptr)
     {
        head = ptr->next;
        free(ptr);
        ptr = head;
    }
}
void display()
{
    struct node *ptr;
    ptr = head;
```

```
        while (ptr)
         {
              printf("%d ",ptr->data);
              ptr = ptr->next;
                    }
}
void isListExist()
{
        if (head)
              printf("List is available\n");
        else
              printf("List is unavailable\n");
}
int main()
{
         int flag = 1, ch, data, pos, result;
        while (flag)
         {
              printf("1. Insertion at the start of List\n");
              printf("2. Insert at the end of list\n");
              printf("3. Insert at node at the given position\n");
              printf("4. Delete node\n");
              printf("5. Delete list\n");
              printf("6. display\n");
```

```
printf("7. Is list exists\n");
printf("8. Exit\n");
printf("Enter ur choice:");
scanf("%d", &ch);
switch (ch)
  {
     case 1:
          printf("Enter data to insert into list\n");
          scanf("%d", &data);
          insertAtStart(data);
          break;
     case 2:
          printf("Enter data to insert into list\n");
          scanf("%d", &data);
          insertAtEnd(data);
          break;
     case 3:
          printf("Enter value for position and data\n");
          scanf("%d%d", &pos, &data);
          insertAtPos(pos, data);
          break;
     case 4:
          printf("Enter value to delete node\n");
          scanf("%d", &data);
```

```
                deleteNode(data);
                break;
            case 5:
                deleteList();
                break;
            case 6:
                display();
                break;
            case 7:
                isListExist();
                break;
            case 8:
                exit(0);
                break;
            default:
                printf("Pleae retry once again\n");
                break;
        }
        printf("\n\n");
    }
return 0;
}
```