main.c

```
#include<stdio.h>
    #include<stdlib.h>
    #include<conio.h>
    struct node
        int info;
        struct node*link;
10
    typedef struct node*NODE;
    NODE getnode()
12 - {
13
        NODE x;
14
        x=(NODE)malloc(sizeof(struct node));
        if(x==NULL)
15
16
        {
            printf("memory full\n");
17
            exit(0);
18
19
20
        return x;
21
    void freenode(NODE x)
22
23
        free(x);
24
25
    }
    NODE insert_front(NODE first,int item)
26
27 - {
28
        NODE temp;
        temp=getnode();
29
        temp->info=item;
30
        temp->link=NULL;
31
32
        if(first==NULL)
        return temp;
33
34
        temp->link=first;
35
        first=temp;
        notunn finct.
```

```
main.c
 37
 38
     NODE delete front(NODE first)
 39 - {
 40
          NODE temp;
          if(first==NULL)
 41
 42 -
 43
              printf("list is empty cannot delete\n");
 44
              return first:
 45
          temp=first;
 46
 47
          temp=temp->link;
          printf("item deleted at front end is=%d \n",first->info);
 48
 49
              (first);
 50
          return temp;
 51
     NODE insert_rear(NODE first,int item)
 52
 53 - {
 54
          NODE temp, cur;
 55
          temp=getnode();
 56
          temp->info=item;
          temp->link=NULL;
 57
 58
          if(first==NULL)
 59
          return temp;
 60
          cur=first;
          while(cur->link!=NULL)
 61
 62
          cur=cur->link;
          cur->link=temp;
 63
          return first;
 64
 65
     NODE delete_rear(NODE first)
 66
 67 - {
 68
          NODE cur, prev;
          if(first==NULL)
 69
 70
 71
              printf("list is empty cannot delete\n");
```

```
main.c
   כס
           II(III'SC==NOLL)
  70
               printf("list is empty cannot delete\n");
  71
  72
               return first;
  73
  74
           if(first->link==NULL)
  75 -
  76
               printf("item deleted is %d\n",first->info);
  77
               free(first);
  78
               return NULL;
  79
  80
           prev=NULL;
  81
           cur=first;
           while(cur->link!=NULL)
  82
  83 -
  84
               prev=cur;
               cur=cur->link;
  85
  86
  87
           printf("item deleted at rear end is %d",cur->info);
  88
           free(cur);
  89
           prev->link=NULL;
  90
           return first;
  91
      }
  92
  93
      NODE delete_pos(int pos,NODE first)
  94 - {
  95
           NODE prev, cur;
           int count;
  96
           if (first==NULL | pos<=0)
  97
  98 -
               printf("Invalid position\n");
  99
               return NULL;
 100
 101
           if (pos==1)
 102
 103 -
               cur=first;
 104
```

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main.c
 102
           if (pos==1)
 103
               cur=first;
 104
 105
               first=first->link;
               freenode(cur);
 106
               return first;
 107
 108
           }
 109
           prev=NULL;
 110
           cur=first;
 111
           count=1;
 112
           while (cur!=NULL)
 113 -
 114
               if (count==pos)
 115 -
 116
                   break;
 117
 118
               prev=cur;
 119
               cur=cur->link;count++;
 120
           if (count!=pos)
 121
 122 -
 123
               printf("Invalid position\n");
 124
               return first;
 125
 126
           prev->link=cur->link;
 127
           freenode(cur);
 128
           return first;
 129
 130
      NODE insert_pos(int item,int pos,NODE first)
 131 - {
 132
           NODE temp, cur, prev;
 133
           int count;
 134
           temp=getnode();
 135
           temp->info=item;
           temp->link=NULL;
 136
           if (first--NIII && nos--1)
 137
```

```
main.c
 138
 139
               return temp;
 140
           if (first==NULL)
 141
 142 -
               printf("Invalid position\n");
 143
 144
               return NULL:
 145
           if (pos==1)
 146
 147 -
 148
               temp->link=first;
 149
               return temp;
 150
 151
           count=1;
 152
           prev=NULL;
 153
           cur=first;
           while (cur!=NULL && count!=pos)
 154
 155 -
           {
 156
               prev=cur;
 157
               cur=cur->link;
 158
               count++;
 159
           if (count==pos)
 160
 161 -
 162
               prev->link=temp;
               temp->link=cur;
 163
 164
               return first;
 165
           printf("Invalid position\n");
 166
 167
           return first;
 168
 169
 170
       void display(NODE first)
 171 - {
 172
           NODE temp;
           : £/£; ma+=_MIII I \
  173
```

```
main.c
      VOID GISPING (NODE 11131)
 171 - {
          NODE temp;
          if(first==NULL)
                f("list empty cannot display items\n");
          for(temp=first;temp!=NULL;temp=temp->link)
              printf("%d\n",temp->info);
 179 }
 180 void main()
 181 - {
          int item,choice,pos;
          NODE first=NULL;
          for(;;)
              printf("\n 1:Insert_front\n 2:Delete_front\n 3:Insert_rear\n 4:Delete_rear\n 5:Delete at specified position\n 6:Insert at specified position\n 7:Display
              printf("enter the choice\n");
              scanf("%d",&choice);
                  tf("----\n");
              switch(choice)
                  case 1:printf("enter the item at front end\n");
                       f("%d",&item);
                  first=insert_front(first,item);
                  break;
                  case 2:first=delete_front(first);
                  break;
                  case 3:printf("enter the item at rear end\n");
                       f("%d",&item);
                  first=insert_rear(first,item);
                  break;
                  case 4:first=delete_rear(first);
                  break;
                  case 5:printf("Enter the position:\n");
                               ("%d",&pos);
```

```
main.c
 184
          tor(;;)
 185
               printf("\n 1:Insert_front\n 2:Delete_front\n 3:Insert_rear\n 4:Delete_rear\n 5:Delete at specified posi
 186
 187
               printf("enter the choice\n");
               scanf("%d",&choice);
 188
               printf("----\n");
 189
               switch(choice)
 190
 191 -
                   case 1:printf("enter the item at front end\n");
 192
                   scanf("%d",&item);
 193
                   first=insert_front(first,item);
 194
 195
                   break:
 196
                   case 2:first=delete front(first);
 197
                   break;
                   case 3:printf("enter the item at rear end\n");
 198
                   scanf("%d",&item);
 199
                   first=insert_rear(first,item);
 200
 201
                   break:
 202
                   case 4:first=delete rear(first);
 203
                   break:
 204
                   case 5:printf("Enter the position:\n");
                          scanf("%d",&pos);
 205
                          first=delete_pos(pos,first);
 206
 207
                          break;
                   case 6:printf("Enter the item and the position:\n");
 208
                          scanf("%d%d",&item,&pos);
 209
                          first=insert pos(item,pos,first);
 210
                          break:
 211
                   case 7:display(first);
 212
 213
                   break;
 214
                   default:exit(0);
                   break:
 215
 216
 217
 218 }
```

```
specified position
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5:Delete at specified position
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      position
                                                                        5:Delete at specified position
                                                                                                                                                                                                                                                                                                                                              position
                                                                                                                                                                                                                                                                                                                                                                 position
                                                                                                                                                                                                            enter the item at front end
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  enter the item at front end
                                                                                                                                                                                                                                                                                                                                               5:Delete at specified
                                                                                                                                                                                                                                                                                                                                                                 specified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      specified
                                                                                                                                                   enter the choice
                                                                                                                                                                                                                                                                                                                                                                                                                         enter the choice
                 2:Delete front
                                                                                                                                                                                                                                                                                      2:Delete front
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1:Insert front
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2:Delete front
                                                                                                              7:Display_list
                                                                                                                                                                                                                                                                    1:Insert front
                                                                                                                                                                                                                                                                                                                                                                                    7:Display_list
front
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         7:Display_list
                                   3:Insert_rear
                                                                                                                                                                                                                                                                                                         3:Insert rear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3:Insert_rear
                                                      4:Delete rear
                                                                                                                                                                                                                                                                                                                            4:Delete_rear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 4:Delete_rear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          at
                                                                                                                                                                                                                                                                                                                                                                   6:Insert at
                                                                                              6:Insert at
1:Insert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6:Insert
                                                                                                                                  8:EXIT
                                                                                                                                                                                                                                                                                                                                                                                                       8:EXIT
```

8:EXIT

```
4:Delete rear
5:Delete at specified position
6:Insert at specified position
7:Display list
8:EXIT
enter the choice
Enter the item and the position:
67
1:Insert front
2:Delete front
3:Insert rear
4:Delete rear
5:Delete at specified position
6:Insert at specified position
7:Display list
8:EXIT
enter the choice
12
67
23
1:Insert front
2:Delete front
3:Insert rear
4:Delete rear
5:Delete at specified position
6:Insert at specified position
7:Display list
8:EXIT
```

```
5:Delete at specified position
                                                                                                                                                                                                                                                                                                                                                                                                                                                position
                                                                                                                                                                                                        5:Delete at specified position
                                                                                                                                                                                                                       specified position
                                                                                                                                                                                                                                                                                                                                                                                                                                                 6:Insert at specified
                                                                                                                                                                                                                                                                                                                     Enter the position:
                              enter the choice
                                                                                                                                                                                                                                                                      enter the choice
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                enter the choice
                                                                                                                                          front
                                                                                                                                                         2:Delete front
                                                                                                                                                                                                                                       7:Display_list
                                                                                                                                                                                                                                                                                                                                                                    1:Insert front
                                                                                                                                                                                                                                                                                                                                                                                   2:Delete front
                                                                                                                                                                                                                                                                                                                                                                                                                                                                7:Display_list
7:Display_list
                                                                                                                                                                        3:Insert rear
                                                                                                                                                                                        4:Delete_rear
                                                                                                                                                                                                                                                                                                                                                                                                 3:Insert_rear
                                                                                                                                                                                                                                                                                                                                                                                                                  4:Delete_rear
                                                                                                                                                                                                                       6:Insert at
                                                                                                                                           1:Insert
                                                                                                                                                                                                                                                       8:EXIT
              8:EXIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8:EXIT
                                                                                                          23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             23
                                                                             12
                                                                                            L9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               67
```

```
main.c
                                          Ctrl+S
     #include<stdio.h>
     #include<stdlib.h>
     #include<conio.h>
     struct node
         int info;
         struct node*link;
     };
     typedef struct node*NODE;
 10
     NODE getnode()
 12 - {
 13
         NODE x;
         x=(NODE)malloc(sizeof(struct node));
         if(x==NULL)
 17
             printf("memory full\n");
             exit(0);
         return x;
 21
 22
     void freenode(NODE x)
 23 - {
         free(x);
 25
     NODE insert_front(NODE first,int item)
 27 - {
         NODE temp;
 29
         temp=getnode();
         temp->info=item;
         temp->link=NULL;
 31
 32
         if(first==NULL)
         return temp;
         temp->link=first;
         first=temp;
 36
         return first;
 38 NODE delete_front(NODE first)
```

```
main.c
                                          Ctrl+S
 37
     NODE delete_front(NODE first)
 39 - {
          NODE temp;
 41
         if(first==NULL)
 42 -
             printf("list is empty cannot delete\n");
              return first;
         temp=first;
         temp=temp->link;
 47
         printf("item deleted at front end is=%d \n",first->info);
             e(first);
         return temp;
 51 }
 52
     NODE insert_rear(NODE first,int item)
 53 - {
         NODE temp, cur;
         temp=getnode();
         temp->info=item;
         temp->link=NULL;
         if(first==NULL)
         return temp;
         cur=first;
         while(cur->link!=NULL)
 61
 62
         cur=cur->link;
         cur->link=temp;
         return first;
 65
     NODE delete_rear(NODE first)
 67 - {
         NODE cur, prev;
         if(first==NULL)
 70 -
 71
             printf("list is empty cannot delete\n");
             return first;
 72
 73
         if(first->link==NULL)
 74
```

```
main.c
                                          Ctrl+S
           if(first->link==NULL)
               printf("item deleted is %d\n",first->info);
   76
               free(first);
               return NULL;
  78
           prev=NULL;
           cur=first;
          while(cur->link!=NULL)
   82
               prev=cur;
               cur=cur->link;
           printf("item deleted at rear end is %d",cur->info);
              e(cur);
           prev->link=NULL;
           return first;
  91 }
      NODE order_list(int item, NODE first)
  93 - {
          NODE temp, prev, cur;
          temp=getnode();
          temp->info=item;
          temp->link=NULL;
           if(first==NULL) return temp;
           if(item<first->info)
 100 -
               temp->link=first;
               return temp;
 104
           prev=NULL;
 105
           cur=first;
          while(cur!=NULL&&item>cur->info)
 107 -
              prev=cur;
              cur=cur->link;
 110
```

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main.c
              cur=cur->link;
 109
 110
           prev->link=temp;
 111
           temp->link=cur;
 112
 113
           return first;
 114
 115 NODE reverse(NODE first)
 116 - {
           NODE cur, temp;
 117
           cur=NULL;
 118
           while(first!=NULL)
 119
 120
              temp=first;
 121
              first=first->link;
 122
 123
              temp->link=cur;
 124
              cur=temp;
 125
 126
           return cur;
 127 }
      NODE concat(NODE first, NODE second)
 128
 129 - {
           NODE cur;
 130
           if(first==NULL)
 131
 132
           return second;
           if(second==NULL)
 133
           return first;
 134
           cur=first;
 135
           while(cur->link!=NULL)
 136
           cur=cur->link;
 137
           cur->link=second;
 138
 139
           return first;
 140
      void display(NODE first)
 141
 142 - {
           NODE temp;
 143
           if(first==NULL)
 144
                 f("list empty cannot display items\n");
 145
  146
           for(temp=first:temp!=NULL:temp=temp->link)
```

```
main.c
                                          Ctrl+S
           II(III'SL==NOLL)
 144
                f("list empty cannot display items\n");
           for(temp=first;temp!=NULL;temp=temp->link)
              printf("%d\n",temp->info);
 150 }
 151 void main()
 152 - {
          int item, choice, n, i;
          NODE first=NULL,a,b;
          for(;;)
              printf("\n 1:Insert_front\n 2:Delete_front\n 3:Insert_rear\n 4:Delete_rear\n 5:Order_list\n 6:reverse_list\n 7:Concat_list\n 8:Display_list\n 9:EXIT\n")
               printf("enter the choice\n");
               scanf("%d",&choice);
              printf("----\n")
              switch(choice)
                   case 1:printf("enter the item at front end\n");
                     anf("%d",&item);
                   first=insert_front(first,item);
                   break;
                   case 2:first=delete_front(first);
                   break;
                   case 3:printf("enter the item at rear end\n");
                   scanf("%d",&item);
                   first=insert_rear(first,item);
                   break;
                   case 4:first=delete_rear(first);
                   break;
                   case 5:printf("enter the item to be inserted in ordered_list\n");
                    scanf("%d",&item);
                   first=order_list(item,first);
                   break;
                   case 6:first=reverse(first);
                   display(first);
                   break;
```

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Ctrl+S
main.c
                   break:
 174
                   case 5:printf("enter the item to be inserted in ordered_list\n");
 175
                   scanf("%d",&item);
 176
 177
                   first=order_list(item, first);
                   break;
 178
                   case 6:first=reverse(first);
 179
                   display(first);
                   break;
                   case 7:printf("Enter the no of nodes in 1\n");
 182
                   scanf("%d",&n);
                   a=NULL;
                   for(i=0;i<n;i++)</pre>
                       printf("Enter the item\n");
                           f("%d",&item);
                       a=insert_rear(a,item);
 190
                   printf("Enter the no of nodes in 2\n");
                   scanf("%d",&n);
                   b=NULL;
                   for(i=0;i<n;i++)
 194
                      printf("Enter the item\n");
 196
                      scanf("%d",&item);
                      b=insert_rear(b,item);
 200
                   a=concat(a,b);
                   display(a);
                   break;
                   case 8:display(first);
 204
                   break;
                   default:exit(0);
                   break;
               }
 208
 209 }
```

```
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```

```
1:Insert_front
2:Delete_front
3:Insert rear
4:Delete rear
5:Order_list
6:reverse_list
7:Concat list
8:Display_list
9:EXIT
enter the choice
enter the item to be inserted in ordered list
12
1:Insert_front
2:Delete front
3:Insert rear
4:Delete rear
5:Order_list
6:reverse list
7:Concat_list
8:Display list
9:EXIT
enter the choice
enter the item to be inserted in ordered list
97
1:Insert_front
2:Delete_front
3:Insert rear
4:Delete rear
5:Order_list
6:reverse list
```

```
6:reverse list
7:Concat list
8:Display list
 9:EXIT
enter the choice
enter the item to be inserted in ordered list
1:Insert front
2:Delete front
3:Insert rear
 4:Delete rear
 5:Order list
 6:reverse list
 7:Concat list
 8:Display_list
 9:EXIT
enter the choice
12
97
1:Insert front
2:Delete front
 3:Insert rear
 4:Delete rear
 5:Order_list
 6:reverse list
 7:Concat list
 8:Display_list
 9:EXIT
```

input

```
Y 2 3
 1:Insert front
 2:Delete front
 3:Insert rear
 4:Delete rear
 5:Order list
 6:reverse list
 7:Concat list
 8:Display list
 9:EXIT
enter the choice
enter the item at front end
12
 1:Insert front
 2:Delete front
 3:Insert rear
 4:Delete rear
 5:Order list
 6:reverse list
 7:Concat list
 8:Display list
 9:EXIT
enter the choice
enter the item at rear end
56
 1:Insert front
 2:Delete front
 3:Insert rear
 4:Delete rear
```

```
8:Display list
9:EXIT
enter the choice
enter the item at rear end
90
1:Insert front
2:Delete front
3:Insert rear
4:Delete rear
5:Order list
6:reverse list
7:Concat list
8:Display list
9:EXIT
enter the choice
90
56
12
1:Insert front
2:Delete front
3:Insert rear
4:Delete rear
5:Order list
 6:reverse_list
7:Concat list
8:Display list
9:EXIT
```

Enter the no of nodes in 2 Enter the no of nodes in 1 enter the choice 1:Insert_front 2:Delete_front 6:reverse_list 8:Display_list 7:Concat_list Enter the item 3:Insert_rear 4:Delete_rear Enter the item 5:Order list 9:EXIT 12 89 4 23 21 23 89 12 3