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```
#include<stdio.h>
#include<string.h>
#include<math.h>

struct node
{
    int item;
    struct node *next;
};

Node getnode()
{
    Node x;
    x = (Node) malloc(sizeof(struct node));
    return x;
}

Node insert_front(Node first, int data)
{
    Node new_node;
    new_node = getNode();
    new_node -> item = data;
    new_node -> next = NULL;
    if (first == NULL)
    {
        return new_node;
    }
    new_node -> next = first;
    first = new_node;
    return first;
}
```

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```
Node delete_end(Node first)
{
    Node prev, cur;
    if (first == NULL)
    {
        printf("underflow\n");
        return first;
    }
    cur = first;
    while (cur -> next != NULL)
    {
        prev = cur;
        cur = cur -> next;
    }
    prev -> next = NULL;
    free(cur);
    return first;
}

Void search(Node first, int data)
{
    int pos = 0;
    Node temp;
    int i;
    if (first == NULL)
    {
        printf("underflow\n");
        return;
    }
}
```

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```
for (temp = first; i=0; temp != NULL;
                        temp = temp -> next
                                        i++)
{
  if (temp -> item == data)
  {
      pos = i + 1;
      printf ("Search successful \n");
      printf ("Element found at %d \n",
                                  pos);
      break;
  }
  else
  {
    pos = 0;
  }
}
if (pos == 0)
{
  printf ("Search unsuccessful \n");
}
}
```

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```
void sort (Node first)
{
    int t;
    Node temp;
    if (first == NULL)
    {
        printf ("list empty\n");
        return;
    }
    for (Node i = first; i != NULL; i = i->next)
        for (Node j = i->next; j != NULL; j = j->next)
            if ((i->item) > (j->item))
            {
                t = i->item;
                i->item = j->item;
                j->item = t;
            }
    printf ("list in sorted order is \n");
}
```

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```
void display(Node first)
{
    int count=0;
    Node temp;
    if (first == NULL)
    {
        printf("underflow\n");
        return;
    }
    for (temp= first; temp != NULL; temp= temp->next)
    {
        count++;
        printf("%d\n", temp->item);
    }
    printf("Number of Nodes %d\n", count);
}

int main()
{
    Node first = NULL;
    int val, n;
    do
    {
        printf("1: Insert at front\n");
        printf("2: Delete Rear\n");
        printf("3: Sort\n");
```

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```
printf("4: Search\n");
printf("5: Display\n");
printf("6: Exit\n");
printf("Enter your choice\n");
scanf("%d", &choice);
switch(choice)
{
  case 1:
      printf("Enter the value to be inserted\n");
      scanf("%d", &val);
      first = insert_front(first, val);
      break;

  case 2:
      first = delete_end(first);
      break;

  case 3:
      sort(first);
      break;

  case 4:
      printf("Enter the element to be searched\n");
      scanf("%d", &n);
      search(first, n);
      break;

  case 5:
      display(first);
      break;
}while(option != 6);
```

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