----------17–02 – 2021 ----------

```
// Stack example  without pointers
#include <stdio.h>
int main ()
{
  //int stack[5]={1,2,3,4}; // Cannot be done like this
  int stack[5];  int top=-1; int choice=0;

  while(choice != 4)
  {
     menu();
     scanf("%d")
     switch(choice)
     {
        case 1:
        case 2:
        case 3:
        case 4: choice = 4; default;
     }


  }




return 0;
```

```
}
  void  menu()
  {
     printf("Enter your choice\n");
     printf("1.Push \n 2. Pop \n 3. Print \n 4.Exit  \n");
  }

  push(){}
  pop(){}
```

----------stack without print ----------

```
// Stack example  without pointers
#include <stdio.h>
int main ()
{
  //int stack[5]={1,2,3,4}; // Cannot be done like this
  int stack[5], top=-1,choice=0,size=5;

  while(choice != 4)
  {
     menu();
     scanf("%d")
     switch(choice)
     {
        case 1:
              if(top == size - 1)
              printf("\n Stack Full Cannot Push ");
```

```
            break;
            else
            push();
            break;

        case 2:  if(top == - 1)
            printf("\n Stack is  Empty Cannot Pop \n ");
            break;
            else
            pop();
            break;
        case 3:
        case 4: choice = 4; default;
      }


  }









return 0;
}
  void  menu()
  {
     printf("Enter your choice\n");
     printf("1.Push \n 2. Pop \n 3. Print \n 4.Exit  \n");
     return;
```

```
 }

 void push()
 {
      printf("Enter element to push");
      scanf("%d",&element);
      ++top;
      stack[top]=element;
      printf("Pushed %d",element);
      return;
 }
void pop()
 {
      printf("Poped Element is  %d ",stack[top]);
      --top;
      return;
 }
void print(){



}
```

---------- Full Stack Program ----------

```
// Stack example  without pointers
```

```
#include <stdio.h>
int stack[5], top=-1,choice=0,size=5,element;
int main ()
{
  //int stack[5]={1,2,3,4}; // Cannot be done like this


  while(choice != 4)
  {
     menu();
     scanf("%d",&choice);
     switch(choice)
     {
        case 1:
              if(top == size - 1)
              {
              printf("\n Stack Full Cannot Push ");
              break;
              }
              else
              {
                 push();
              }
              break;

        case 2:  if(top == - 1)
              {printf("\n Stack is Empty Cannot Pop \n ");
              break;}
              else
```

```
            {pop();}
            break;

        case 3: print(); break;

        case 4: choice = 4;  break;
        default: printf("\n Wrong choice");
            break;
    }


 }




return 0;
}
 void  menu()
 {
    printf("Enter your choice\n");
    printf("1.Push \n 2. Pop \n 3. Print \n 4.Exit  \n");
    return;
 }

 void push()
 {
     printf("Enter element to push");
```

```
        scanf("%d",&element);
        ++top;
        stack[top]=element;
        printf("Pushed %d",element);
        return;
  }
void pop()
  {
        printf("Poped Element is  %d ",stack[top]);
        --top;
        return;
  }
void print()
{
    printf("-------Stack is  ------- \n");
    for (int i = top; i >= 0; i--) {
        printf("\n %d \n",stack[i]);
    }

}
```

---------- Linked List example without pointers without loop -------

```
// Linked List  example without pointers without loop
#include <stdio.h>

struct node
{
```

```
  int data;
  struct node *link;
};
typedef struct node ll;

int main ()
{
   ll l1,l2,l3,l4;
   l1.data=2;
   l2.data=4;
   l3.data=6;
   l4.data=8;

   l1.link = &l2 ;
   l2.link = &l3;
   l3.link = &l4;
   l4.link = NULL;

   printf("\n %d %u --> ",l1.data,l1.link);
   printf(" %d %u --> ",l2.data,l2.link);
   printf(" %d %u --> ",l3.data,l3.link);
   printf(" %d %u --> \n",l4.data,l4.link);

return 0;
}
```

----------Linked List with dynamic memory allocation --------

----------insert beg and print working ----------

```
// Linked List  example  with dynamic memory allocation  without loop
#include <stdio.h>

struct node
{
  int data;
  struct node *link;
};
typedef struct node ll;

ll *first=NULL,*temp ;int data=0,choice=0;
int main ()
{



while(choice != 4)

  {

     menu();

     scanf("%d",&choice);

     switch(choice)
```

```
    {

        case 1:


        break;
        case 2:
                insertbeg();
        break;
        case 3:break;
        case 4:break;
        case 5:break;
        case 6:break;
        case 7:print(); break;
        case 8:break;
        case 9: exit(0);
        default : printf("Wrong choice");




    }


}
```

```
return 0;

}

 void  menu()

 {

    printf("\nEnter your choice\n");
    printf("1.Insert Beg \n2.Insert End \n3.Insert at position \n");
    printf("4.Del First \n5.Delete Last \n6.Delete node  at position \n");
    printf("7.Print \n8.Search \n9.Exit \n");
    return;

 }



 void insertbeg()
 {
    if(first == NULL) // if the list is empty
    {
```

```
        first  = (ll *)malloc(sizeof(ll));
        printf("Enter data for the node \n");
        scanf("%d",&data);
        first->data = data;
        first->link = NULL;
    }

    else
    {
        temp = (ll *)malloc(sizeof(ll));
        printf("Enter data for the node \n");
        scanf("%d",&data);
        temp->data = data;
        temp->link = first;
        first = temp;
    }

 }

void insertend()

 {

 }

void insertatpos()

{
```

```
}
void deleteatbeg()

{



}
void deletelast()

{



}
void deletepos()
{



}
void print(){

   if(first == NULL)
   {
      printf("List is empty ");
   }
   else
   {
      temp = first;
      while(temp != NULL)
```

```
        {
          printf(" [%d   %u]-> \t",temp->data,temp->link);
          temp = temp -> link;
        }

    }

}

void search(){



}
```

----------18-2-2021 ----------

//----------insert beg and print working and insert after position ----------

```
// Linked List example with dynamic memory allocation without loop

#include <stdio.h>


struct node

{

  int data;

  struct node *link;

};

typedef struct node ll;


ll *first=NULL,*temp ;int data=0,choice=0,sizeoflist;
```

```
int main ()

{









while(choice != 4)



 {



    menu();



    scanf("%d",&choice);



    switch(choice)
```

```
{



   case 1:




   break;

   case 2:

         insertbeg();

   break;

   case 3:

        insertatpos();

        break;

   case 4:break;

   case 5:break;

   case 6:break;

   case 7:print(); break;
```

```
        case 8:break;

        case 9: exit(0);

        default : printf("Wrong choice");

    }

}
```

```
return 0;

}

  void  menu()

  {
```

```
    printf("\nEnter your choice\n");

    printf("1.Insert End \n2.Insert Beg \n3.Insert after which position \n");

    printf("4.Del First \n5.Delete Last \n6.Delete node  at position \n");

    printf("7.Print \n8.Search \n9.Exit \n");

    return;



}









void insertbeg()

{

    if(first == NULL) // if the list is empty
```

```
{
   first  = (ll *)malloc(sizeof(ll));
   ++sizeoflist;
   printf("Enter data for the node \n");
   scanf("%d",&data);
   first->data = data;
   first->link = NULL;

}

else
{
   temp = (ll *)malloc(sizeof(ll));
   printf("Enter data for the node \n");
   scanf("%d",&data);
```

```
        temp->data = data;

        temp->link = first;

        first = temp;

      }



  }



void insertend()
  {



  }



void insertatpos()
{
    int position=0; int tdata; ll * temp1;

   printf("Enter after which node you want to insert node  ");
```

```
scanf("%d",&position);

if(first == NULL)
{
   printf("Linked List Does not exit ");
   return;
}
if(position == 0)
{

   insertbeg();
   return;
}

if(position > sizeoflist )
{
    printf("Out of bounds  ");
    return ;

}//
//  3
temp = first;
for (int i = 1; i < position; i++) {
   temp  = temp->link;
}
printf("Enter data");
scanf("%d",&tdata);
temp1 = (ll *) malloc(sizeof(ll));
temp1->link = temp->link;
```

```
  temp->link = temp1;
  temp1->data = tdata;
  ++sizeoflist;

}

void deleteatbeg()

{

}

void deletelast()

{

}
```

```
void deletepos()

{









}

void print(){



   if(first == NULL)

   {

      printf("List is empty ");

   }

   else

   {

      temp = first;
```

```
        while(temp != NULL)

        {

          printf(" [%d   %u]-> \t",temp->data,temp->link);

          temp = temp -> link;

        }



    }



}



void search(){









}
```

---------- except search ----------

```
#include <stdio.h>



struct node

{

  int data;

  struct node *link;

};

typedef struct node ll;



ll *first=NULL,*temp ;int data=0,choice=0,sizeoflist;

int main ()

{
```

```
while(choice != 9)

 {

    menu();

    scanf("%d",&choice);

    switch(choice)

    {

       case 1:
```

```
break;

case 2:

      insertbeg();

break;

case 3:

    insertatpos();

    break;

case 4:
    deleteatbeg();
    break;

case 5: deletepos();

    break;

case 6:break;

case 7:print(); break;
```

```
        case 8:break;

        case 9: exit(0);

        default : printf("Wrong choice");

    }

}
```

```
return 0;



}



  void  menu()



  {
```

```
    printf("\nEnter your choice\n");

    printf("1.Insert End \n2.Insert Beg \n3.Insert after which position \n");

    printf("4.Del First \n5.Delete Node no  \n");

    printf("7.Print \n8.Search \n9.Exit \n");

    return;



}









void insertbeg()

{

    if(first == NULL) // if the list is empty

    {
```

```
    first  = (ll *)malloc(sizeof(ll));

    ++sizeoflist;

    printf("Enter data for the node \n");

    scanf("%d",&data);

    first->data = data;

    first->link = NULL;



}



else

{

    temp = (ll *)malloc(sizeof(ll));

    printf("Enter data for the node \n");

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

```
        temp->data = data;

        temp->link = first;

        first = temp;

     }


 }



void insertend()
 {



 }



void insertatpos()
{
    int position=0; int tdata; ll * temp1;

   printf("Enter after which node you want to insert node  ");
   scanf("%d",&position);
```

```
if(first == NULL)
{
   printf("Linked List Does not exit ");
   return;
}
if(position == 0)
{

   insertbeg();
   return;
}

if(position > sizeoflist )
{
    printf("Out of bounds  ");
    return ;

}//
//  3
temp = first;
for (int i = 1; i < position; i++) {
   temp  = temp->link;
}
printf("Enter data");
scanf("%d",&tdata);
temp1 = (ll *) malloc(sizeof(ll));
temp1->link = temp->link;
temp->link = temp1;
```

```
   temp1->data = tdata;
   ++sizeoflist;

}

void deleteatbeg()
{
     ll * temp1;
     if(first == NULL){
        printf("No List ");
        return ;
     }
     printf("Deleted Node Data is %d",first->data);
     temp1 = first;
     first= first->link;
     free(temp1);
}

void deletelast()
{




}

void deletepos()
{
      ll * temp,*temp1; int pos;
```

```
    temp = first;
    printf("Enter Position to delete  ");
    scanf("%d",&pos);
    if(pos == 0)
    {
    deleteatbeg();
    return;
    }

    for (int i = 1; i < pos; i++) {
    temp1 = temp;
    temp = temp -> link;
    }
    temp1->link = temp->link;
    printf("Deleted Data is %d \n",temp->data);
    free(temp);


}

void print(){

    if(first == NULL)

    {

        printf("List is empty ");
```

```
    }

    else

    {

        temp = first;

        while(temp != NULL)

        {

          printf(" [%d   %u]-> \t",temp->data,temp->link);

          temp = temp -> link;

        }



    }



}



void search(){
```

```
}

----------Linked List C,R,U,D and Search ----------

//----------insert beg and print working ----------



// Linked List example with dynamic memory allocation without loop

#include <stdio.h>



struct node

{

  int data;

  struct node *link;

};
```

```
typedef struct node ll;



ll *first=NULL,*temp ;int data=0,choice=0,sizeoflist;

int main ()

{







while(choice != 9)



 {



    menu();



    scanf("%d",&choice);
```

```
switch(choice)

{

   case 1:

   break;

   case 2:

         insertbeg();

   break;

   case 3:

        insertatpos();

        break;

   case 4:

        deleteatbeg();
```

```
        break;

    case 5: deletepos();

        break;

    case 6:break;

    case 7:print(); break;

    case 8:
        search();
        break;

    case 9: exit(0);

    default : printf("Wrong choice");

}
```

```
}
```

```
return 0;
```

```
}


 void  menu()


 {


    printf("\nEnter your choice\n");

    printf("1.Insert End \n2.Insert Beg \n3.Insert after which position \n");

    printf("4.Del First \n5.Delete Node no  \n");

    printf("7.Print \n8.Search \n9.Exit \n");

    return;


 }
```

```
void insertbeg()

{

   if(first == NULL) // if the list is empty

   {

      first  = (ll *)malloc(sizeof(ll));

      ++sizeoflist;

      printf("Enter data for the node \n");

      scanf("%d",&data);

      first->data = data;

      first->link = NULL;



   }
```

```
    else
    {
        temp = (ll *)malloc(sizeof(ll));
        printf("Enter data for the node \n");
        scanf("%d",&data);
        temp->data = data;
        temp->link = first;
        first = temp;
    }

}

void insertend()
 {
```

```
 }



void insertatpos()
{
   int position=0; int tdata; ll * temp1;

  printf("Enter after which node you want to insert node  ");
  scanf("%d",&position);

  if(first == NULL)
  {
     printf("Linked List Does not exit ");
     return;
  }
  if(position == 0)
  {

     insertbeg();
     return;
  }

  if(position > sizeoflist )
  {
      printf("Out of bounds  ");
      return ;
```

```
  }//
  //  3
  temp = first;
  for (int i = 1; i < position; i++) {
     temp  = temp->link;
  }
  printf("Enter data");
  scanf("%d",&tdata);
  temp1 = (ll *) malloc(sizeof(ll));
  temp1->link = temp->link;
  temp->link = temp1;
  temp1->data = tdata;
  ++sizeoflist;

}

void deleteatbeg()
{
    ll * temp1;
    if(first == NULL){
       printf("No List ");
       return ;
    }
    printf("Deleted Node Data is %d",first->data);
    temp1 = first;
    first= first->link;
    free(temp1);
}
```

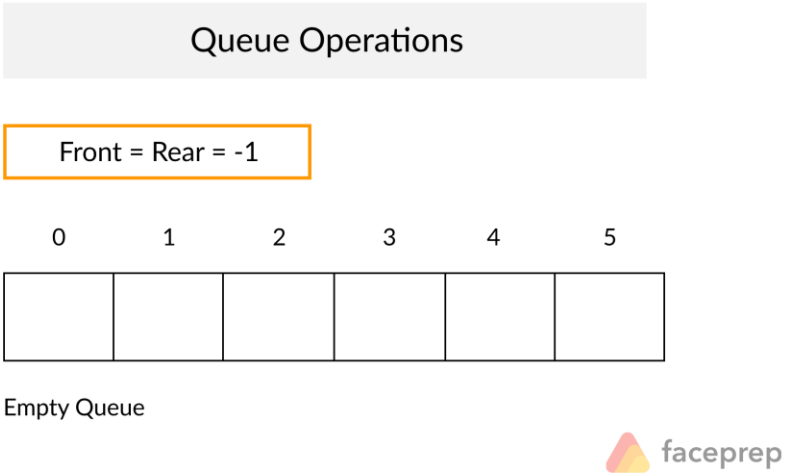
```
void deletelast()
{









}

void deletepos()
{
      ll * temp,*temp1; int pos;

   temp = first;
   printf("Enter Position to delete  ");
   scanf("%d",&pos);
   if(pos == 0)
   {
   deleteatbeg();
   return;
   }

   for (int i = 1; i < pos; i++) {
   temp1 = temp;
   temp = temp -> link;
   }
   temp1->link = temp->link;
   printf("Deleted Data is %d \n",temp->data);
   free(temp);
```

```
}

void print(){

   if(first == NULL)

   {

      printf("List is empty ");

   }

   else

   {

      temp = first;

      while(temp != NULL)

      {

        printf(" [%d   %u]-> \t",temp->data,temp->link);

        temp = temp -> link;

      }
```

```
    }



}



void search(){
    int searchelement=0,foundindex=0,searchposition,flag=0;
    ll * searchpointer,*stemp;
    if(first == NULL)
    {
        printf("List Empty");
        return;
    }

    stemp = first;
    printf("Enter element to search ");
    scanf("%d",&searchelement);
    for (int i = 1; stemp != NULL ; i++) {
      if((stemp->data) == searchelement)
      {
          flag = 1 ;
         Searchpointer = stemp;
          searchposition = i;
```

```
        break;
      }
      stemp=stemp->link;
    }

    if(flag == 1)
    {
       printf("Found %d  at %d \n",searchpointer->data,searchposition);
    }
    else
    printf("%d  not found",searchelement);

}
```

---------- Queue ----------



```
#include <stdio.h>
int f=0,r=-1,size=6;int ch=0;int data=0;
int queue[6];
int
main ()
{
  int queue[6];

  while(ch!=4)
  {
     printf("\n1.enqueue\n 2.dequeue\n 3.print\n4.Exit \n");
     printf("Enter your choice ");
     scanf("%d",&ch);
     switch(ch)
     {
        case 1: enqueue();break;
        case 2:  dequeue(); break;
        case 3: print(); break;
        case 4:  exit(0);
     }

  }



}
 void enqueue()
 {
```

```
    if((r==size-1))
    {
        printf("queue full");
        return;
    }
    ++r;
    printf("Enter Data to enqueue");
    scanf("%d",&data);
    queue[r]=data;
    printf("Queued Data\n");

}

void dequeue(){
    if((f==0) && (r==-1))
    {
        printf("Q is empty ");
        return;
    }
    printf("dequeued data is %d",queue[f]);
    ++f;
}
void print(){


    for (int i = f; i <= r; i++) {
        printf("%d   \t ",queue[i]);
                /* code */
    }
```

```
 }
```

----------19-02-2021 ----------

----------Linked Stack ----------

```
#include <stdio.h>
struct node
{
int data;
struct node *link;
};

typedef struct node ll;
ll * first = NULL, *top=NULL;
int data = 0, choice = 0, sizeoflist;

int
main ()
{
while (choice != 4)
   {
menu ();

scanf ("%d", &choice);

switch (choice)
```

```
{
case 1: push(); break;
case 2: pop(); break ;
case 3: print(); break;
case 4:  exit (0);
default:  printf ("Wrong choice");
  }
}
return
   0;
}
void
menu (){
printf("--------Linked Stack -----");
printf ("\nEnter your choice  \n");
printf
   (" 1.Push \n 2.Pop \n 3.Print \n 4.Exit  \n");
return;
}
void push(){

   ll *temp;int i;ll * temp1;

                  // Gets executd only Once
   if(first == NULL) // When the stack is  empty
   {
     first = (ll*) malloc(sizeof(ll));
     printf("Enter Data ");
     scanf("%d",&data);
```

```
     first->data =data;
     first->link = NULL;
     top = first;
    return;
   }

   temp = first;

   for(i=0;temp->link != NULL;)
   {
      temp=temp->link;
   }

     temp1 = (ll*) malloc(sizeof(ll));
     printf("Enter Data ");
     scanf("%d",&data);
     temp1->data =data;
     temp->link = temp1;
     return;
}

void pop()
{
    ll *t1=NULL, *t2=NULL;
    if(first == NULL)
    {
       printf("Stack Empty ");
       return;
    }
```

```
    t2 = first;

   for(;t2->link != NULL;)
   {
      t1 = t2;
      t2=t2->link;
   }
   printf("Poped Element is %d \n",t2->data);
   t1->link = NULL;
   free(t2);
}


void print(){

    ll *t2=NULL;
    if(first == NULL)
    {
       printf("Stack Empty ");
       return;
    }
    t2 = first;
   for(;t2!=NULL;)
   {printf("%d  \t",t2->data);
          t2=t2->link;
   }

}
```

----------Lined Queue ----------

```
// linked queue example with linked list

#include <stdio.h>
struct node
{
int data;
struct node *link;
};

typedef struct node ll;
ll * first = NULL, *top=NULL;
int data = 0, choice = 0, sizeoflist;

int
main ()
{
while (choice != 4)
   {
menu ();

scanf ("%d", &choice);

switch (choice)
{
case 1: enqueue(); break;
```

```
case 2: dequeue(); break ;
case 3: print(); break;
case 4:  exit (0);
default:  printf ("Wrong choice");
  }
}
return
   0;
}
void
menu (){
printf("--------Linked Stack -----");
printf ("\nEnter your choice  \n");
printf
   ("\n1.Enqueue \n2.Dqueue \n3.Print \n4.Exit  \n");
return;
}
void enqueue(){

   ll *temp;int i;ll * temp1;

                  // Gets executd only Once
   if(first == NULL) // When the queue is  empty
   {
     first = (ll*) malloc(sizeof(ll));
     printf("Enter Data ");
     scanf("%d",&data);
     first->data =data;
     first->link = NULL;
```

```
     top = first;
     return;
    }

    temp = first;

    for(i=0;temp->link != NULL;)
    {
       temp=temp->link;
    }

     temp1 = (ll*) malloc(sizeof(ll));
     printf("Enter Data ");
     scanf("%d",&data);
     temp1->data =data;
     temp->link = temp1;
     return;
}

void dequeue() // delete first of Linked list is equal to dequeue
{
    ll *t1=NULL, *t2=NULL;
    if(first == NULL)
    {
       printf("Stack Empty ");
       return;
    }
    t2 = first;
    printf("Dequeued %d \n",first->data);
```

```
    first = first = first -> link;
    free(t2);
}



void print(){

    ll *t2=NULL;
    if(first == NULL)
    {
       printf("Stack Empty ");
       return;
    }
    t2 = first;
   for(;t2!=NULL;)
   {printf("%d  \t",t2->data);
           t2=t2->link;
   }

}
```

----------22-02-2021 ----------

Command line args example

```
#include <stdio.h>

int main( int argc, char *argv[] ) {

for(int i = 0; i<argc ;i++)
{
printf("%s",argv[i]);
}
}
```

----------file read with command line args ----------

```
#include <stdio.h>

main(int argc, char** argv) {
  if(argc < 2 )
  {
  printf("At least one argument required");
  printf("%s  filename",argv[0]);
  return;
  }
   FILE *fp;
   char buff[1255];
```

```
  fp = fopen(argv[1], "r");
  fscanf(fp, "%s", buff);
  printf("1 : %s\n", buff );
  fclose(fp);
}
```

printf	Prints to screen	
fprintf	To file	
scanf	From keyboard	
fscanf	From file	
puts	Un formatted output	
fputs	Un formatted file	
gets	Read un formatted	
fgets	Read un formatted from file	

----------File Copy Program ----------

```
#include <stdio.h>
main(int argc, char *argv[]) {
  FILE *fp1,*fp2; char buff[1000]; char ch;
  if(argc != 3 )
  {
 printf("At least two arguments required");
 printf("%s sourcefile destfile \n",argv[0]);
 return;
  }
  fp1 = fopen(argv[1], "r");
```

```
  fp2 = fopen(argv[2], "w");

   c = fgetc(fp1);
   while (c != EOF)
   {
       fputc(c, fp2);
       c = fgetc(fp1);
   }
   printf("File Copied");
   fclose(fp1);// close file
   fclose(fp2);// close file
   }
```

----------file copy with error check ----------

```
#include <stdio.h>
main(int argc, char *argv[]) {
   FILE *fp1,*fp2; char buff[1000]; char ch;
   if(argc != 3 )
   {
  printf("At least two arguments required");
  printf("%s sourcefile destfile \n",argv[0]);
  return;
   }
   fp1 = fopen(argv[1], "r");
   if(fp1 == NULL)
   {
   printf("Source File Could Not be opened ");
```

```
  }
  fp2 = fopen(argv[2], "w");
  if(fp2 == NULL)
  {
printf("Cannot create destination File");

  }

   c = fgetc(fp1); // start reading
   while (c != EOF)
   {
      fputc(c, fp2);
      c = fgetc(fp1);
   }
   printf("File Copied\n");
  fclose(fp1);// close file
  fclose(fp2);// close file
  }
```

----------binary file write ----------

```
#include <stdio.h>
#include <stdlib.h>
struct threeNum
{   int n1, n2, n3;
};
```

```
int main()
{
  int n;
  struct threeNum num;
  FILE *fptr;
  if ((fptr = fopen("bcontent","wb")) == NULL){
      printf("Error! opening file");
      // Program exits if the file pointer returns NULL.
      exit(1);
  }
  for(n = 1; n < 5; ++n)
  {
    num.n1 = n;
    num.n2 = 5*n;
    num.n3 = 5*n + 1;
    fwrite(&num, sizeof(struct threeNum), 1, fptr);
  }
  fclose(fptr);

  return 0;
}
```