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1	Implement Binary Search using call back when there is more than one constraint to check for. a) Search for a number if the number is even b) Search for a number if the number is less than 22. **Input:** enter the element to be searched 18 **Output:** It is even and found at 2 position It is less than 22 and found at 2 position **Input:** enter the element to be searched 56 **Output:** It is even and found at 8 position not found **Input:** enter the element to be searched 53

Output:

not found

not found

Program:

```
/*#include<stdio.h>
int search(int[],int,int,int,int(*p)(int));
int iseven(int);
int islessthan22(int);
int main()
{
	int a[]={20,30,40,45,55,89,101};
	int n;
	int key;
	int pos;
	n=sizeof(a)/sizeof(*a);
	printf("Enter the element to be searched:");
	scanf("%d",&key);
	pos=search(a,0,n-1,key,iseven);
	if(pos==-1)
		printf("Element not found\n");
	else
		printf("Element is even and found at %d\n",pos);
	pos=search(a,0,n-1,key,islessthan22);
	if(pos==-1)
		printf("Element not found\n");
	else
		printf("Element is less than 22 and found at %d\n",pos);
	return 0;
}
int iseven(int x)
{
	return x%2==0;
}
int islessthan22(int x)
{
	return x<22;
}
int search(int a[],int low,int high,int key,int(*p)(int))
{
```

```
        int pos=-1;
        int mid;
        if(low>high)
                return pos;
        else
                mid=(low+high)/2;
        if(a[mid]==key && p(key))
                pos=mid;
        else if(a[mid]>key)
                return search(a,low,mid-1,key,p);
        else
                return search(a,mid+1,high,key,p);
        return pos;
}*/

#include <stdio.h>
int binsearch(int *a,int low,int high,int key,int (*fn)(int));
int even(int x);
int num(int x);
int main()
{
  int a[]={11,13,18,19,22,33,55,66,77,88};
  int key;
  int n=sizeof(a)/sizeof(*a);
  printf("Enter the element to be searched: ");
  scanf("%d",&key);
  int pos=binsearch(a,0,n-1,key,even);
  if(pos==-1)
        printf("Number is not even\n");
  else
        printf("It is even and found at %d position\n",pos);
  pos=binsearch(a,0,n-1,key,num);
  if(pos==-1)
        printf("Number is not less than 22\n");
  else
        printf("It is less than 22 and found at %d position\n",pos);
  return 0;
}
int even(int x)
{
  return x%2==0;
}
```

```
int num(int x)
{
  return x<22;
}
int binsearch(int *a,int low,int high,int key,int (*fn)(int))
{
  int mid; int res=-1; int m;
  if(low>high)
    return res;
  else
  {
    mid=(low+high)/2;
    if(a[mid]==key && fn(key))
      return mid;
    else if(a[mid]>key)
      return binsearch(a,low,mid-1,key,fn);
    else
      return binsearch(a,mid+1,high,key,fn);
  }
}
```

Output Screenshot:

```
D:\PES\Semester 2\Computer_Science- C Programming\C_Lab\Week_10>gcc Program1.c

D:\PES\Semester 2\Computer_Science- C Programming\C_Lab\Week_10>a
Enter the element to be searched: 18
It is even and found at 2 position
It is less than 22 and found at 2 position

D:\PES\Semester 2\Computer_Science- C Programming\C_Lab\Week_10>a
Enter the element to be searched: 13
Number is not even
It is less than 22 and found at 1 position
```

2 Write a program to copy the contents of one file to another using command line arguments

(Instruction to be given in the command line)

>a abc.txt def.txt

(abc.txt is the file having contents which will be copied to the file def.txt)

Program:

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

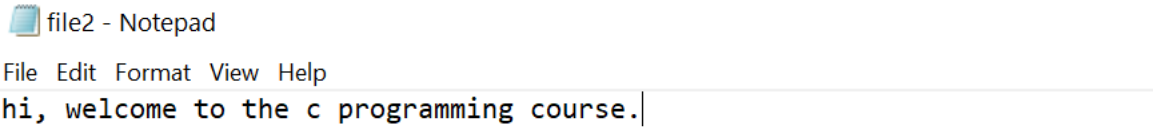
```
#include <stdlib.h>
int main()
{
        FILE *fptr1, *fptr2;
        char filename[100], c;
        printf("Enter the filename to open for reading \n");
        scanf("%s", filename);
        fptr1 = fopen(filename, "r");
        if (fptr1 == NULL)
        {
                printf("Cannot open file %s \n", filename);
                exit(0);
        }
        printf("Enter the filename to open for writing \n");
        scanf("%s", filename);
        fptr2 = fopen(filename, "w");
        if (fptr2 == NULL)
        {
                printf("Cannot open file %s \n", filename);
                exit(0);
        }
        c = fgetc(fptr1);
        while (c != EOF)
        {
                fputc(c, fptr2);
                c = fgetc(fptr1);
        }
        printf("\nContents copied to %s", filename);
        fclose(fptr1);
        fclose(fptr2);
        return 0;
}
```

Output Screenshot:

```
D:\PES\Semester 2\Computer_Science- C Programming\C_Lab\Week_10>gcc Program2.c

D:\PES\Semester 2\Computer_Science- C Programming\C_Lab\Week_10>a
Enter the filename to open for reading
file1.txt
Enter the filename to open for writing
file2.txt

Contents copied to file2.txt
D:\PES\Semester 2\Computer_Science- C Programming\C_Lab\Week_10>_
```



3 Write a program using enumerated types which when given today's date will print out tomorrow's date.

Input:

Enter a date (number 3 letter lower case month e.g. 31 jan)

30 nov

Output:

Tomorrow is 1 dec

Input:

Enter a date (number 3 letter lower case month e.g. 31 jan)

31 dec

Output:

Tomorrow is 1 jan

Program:

```
#include <stdio.h>
#include <string.h>
#include <stdlib.h>
enum months{jan=1,feb,mar,apr,may,jun,jul,aug,sep,oct,nov,dec}
```

```
month;
static char
*month_out[]={"NOT_MONTH","jan","feb","mar","apr","may","jun","jul","aug","sep","oct
","nov","dec"};
static int days_in_month[]={-1,31,28,31,30,31,30,31,31,30,31,30,31};
enum months translate(char*);
int check(int,enum months);
void tomorrow(int,enum months);
int main()
{
        int day;
        char mon[4];
        printf("Enter a date(number followed by month in 3 letter lowercase e.g.31 jan) \n");
        scanf("%d %s",&day,mon);
        month=translate(mon);
        if(!check(day,month))
                tomorrow(day,month);
        return(0);
}
enum months translate(char*m)
{
        if(strcmp(m,"jan")==0)
                return jan;
        else if(strcmp(m,"feb")==0)
                return feb;
        else if(strcmp(m,"mar")==0)
                return mar;
        else if(strcmp(m,"apr")==0)
                return apr;
        else if(strcmp(m,"may")==0)
                return may;
        else if(strcmp(m,"jun")==0)
                return jun;
        else if(strcmp(m,"jul")==0)
                return jul;
        else if(strcmp(m,"aug")==0)
                return aug;
        else if(strcmp(m,"sep")==0)
                return sep;
        else if(strcmp(m,"oct")==0)
                return oct;
        else if(strcmp(m,"nov")==0)
```

```
                return nov;
        else if(strcmp(m,"dec")==0)
                return dec;
}
int check(int day,enum months month_in)
{
        if((day<1)||(day>days_in_month[month]))
        {
                printf("Error:Invalid Input %d %s \n",day,month_out[month_in]);
                return 1;
        }
        else
                return 0;
}
void tomorrow(int day,enum months month_in)
{
        if(day < days_in_month[month_in])
                printf("Tomorrow is %d %s \n",day+1,month_out[month_in]);
        else if((day==days_in_month[month_in])&&(month_out[month_in]!="dec"))
                printf("Tomorrowis 1 %s \n",month_out[month_in+1]);
        else
                printf("Tomorrow is 1 %s \n","jan");
}
```

Output Screenshot:

```
D:\PES\Semester 2\Computer_Science- C Programming\C_Lab\Week_10>gcc Program3.c

D:\PES\Semester 2\Computer_Science- C Programming\C_Lab\Week_10>a
Enter a date(number followed by month in 3 letter lowercase e.g.31 jan)
20 jan
Tomorrow is 21 jan

D:\PES\Semester 2\Computer_Science- C Programming\C_Lab\Week_10>a
Enter a date(number followed by month in 3 letter lowercase e.g.31 jan)
31 jan
Tomorrowis 1 feb

D:\PES\Semester 2\Computer_Science- C Programming\C_Lab\Week_10>a
Enter a date(number followed by month in 3 letter lowercase e.g.31 jan)
31 dec
Tomorrow is 1 jan
```