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**ITE - 1004**  
**DATA STRUCTURE AND ALGORITHM**  
**BINARY SEARCH**

```
#include<stdio.h>
void binary(int A[20],int x)
{
    int lb=0;
    int ub=19;
    int flag=0;
    while (lb<=ub)
    {
        mid=(lb+ub)/2;
        if (A[mid]>x)
        {
            ub=mid-1;
        }
        if (A[mid]<x)
        {
            lb=mid+1;
        }
        if (A[mid]==x)
        {
            flag=1;
            break;
        }
    }
    if(flag==1)
    {
        printf("element found!");
    }
    else
    {
        printf("element not found");
    }
}
int main()
{
    int A[20];
```

```

    int x;
    int i;
    printf("enter the elements in the sorted order\n");
    for(i=0;i<20;i++)
    {
        scanf("%d",&A[i]);
    }
    printf("enter the number to be searched:\n");
    scanf("%d",&x);
    binary(A,x);
    return 0;
}

```

The screenshot shows a code editor window titled "Untitled1.c - Code::Blocks 16.01". The editor displays a C program for binary search. The code is as follows:

```

1  #include<stdio.h>
2  void binary(int A[20],int x)
3  {
4      int lb=0;
5      int ub=19;
6      int flag=0;
7      while(lb<=ub)
8      {
9          mid=(lb+ub)/2;
10         if(A[mid]>x)
11         {
12             ub=mid-1;
13         }
14         if(A[mid]<x)
15         {
16             lb=mid+1;
17         }
18         if(A[mid]==x)
19         {
20             flag=1;
21             break;
22         }
23     }
24     if(flag==1)
25     {
26         printf("element found!");
27     }
28     else
29     {
30         // ... (code is partially obscured)
31     }

```

The editor interface includes a menu bar (File, Edit, View, Search, Project, Build, Debug, Fortran, wxSmith, Tools, Tools+, Plugins, DoxyBlocks, Settings, Help), a toolbar, and a sidebar with "Projects", "Symbols", and "Files" tabs. The status bar at the bottom shows the file path "C:\Users\Rites\Documents\Untitled1.c", window management options, and the current cursor position "Line 51, Column 1". The Windows taskbar at the very bottom shows the date and time as "8:29 PM 20-Mar-18".

The screenshot shows the Code::Blocks IDE with a C program titled 'Untitled1.c'. The program implements a binary search algorithm. It includes a `break;` statement at the end of a loop, an `if(flag==1)` condition to print 'element found!', and an `else` block to print 'element not found'. The `main` function declares an array `A` of size 20, prompts the user to enter elements in sorted order, reads 20 integers using `scanf`, prompts for a number to be searched, reads it, and calls the `binary` function. The status bar at the bottom indicates the file path, window title, and current cursor position (Line 51, Column 1).

```
21         break;
22     }
23
24 }
25 if(flag==1)
26 {
27     printf("element found!");
28 }
29
30 else
31 {
32     printf("element not found");
33 }
34 }
35
36 int main()
37 {
38     int A[20];
39     int x;
40     int i;
41     printf("enter the elements in the sorted order\n");
42     for(i=0;i<20;i++)
43     {
44         scanf("%d",&A[i]);
45     }
46     printf("enter the number to be searched:\n");
47     scanf("%d",&x);
48     binary(A,x);
49     return 0;
50 }
51
```

## OUTPUT

The screenshot shows the output of the program in a console window. It displays the prompts and user input for the binary search process, including the sorted array elements and the search result.

```
enter the elements in the sorted order
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
enter the number to be searched:
28
element found!

...Program finished with exit code 0
Press ENTER to exit console.
```