SOURCE CODE:

```
#include <stdio.h>

void binary(int a[], int lo, int hi, int key)
{
    int mid;
    clrscr();

    if (lo > hi)
    {
     printf("\n\n\n\tElement %d NOT found!\n",key);
     return;
    }
    mid = (lo + hi) / 2;
    if (a[mid] == key)
    {
     printf("\n\n\n\tElement %d FOUND!!! at position %d
\n",key,mid+1);
    }
    else if (a[mid] > key)
    {
     binary(a, lo, mid - 1, key);
    }
    else if (a[mid] < key)
    {
     binary(a, mid + 1, hi, key);
    }
}


void sort(int a[], int size)
{

    int temp, i, j;

    printf("\n\tEnter the elements:\n");
      for(i = 0; i < size; i++)
      {
         printf("\t\t");
         scanf("%d", &a[i]);
         printf("\n");
      }

    for (i = 0; i < size; i++)
    {
      for (j = i; j < size; j++)
      {
          if (a[i] > a[j])
          {
           temp = a[i];
           a[i] = a[j];
           a[j] = temp;
          }
      }
    }
```

```
    clrscr();
    printf("\n\tSorted array is as follows :\n\n");
    for (j = 0; j < size; j++)
    {
       printf("\t\t%d",a[j]);
       printf("\n");
    }
}


void main()
{
    int op, ch, key, size, i;
    int a[25];

    loop2:
    clrscr();
    printf("\tEnter size of the array: ");
    scanf("%d", &size);

    printf("\n\tChoose the type of list you wish to enter: ");
    printf("\n\n\t  1. Sorted (Ascending to descending integers)");
    printf("\n\n\t  2. Unsorted (Random integers)");
    printf("\n\n\n\tEnter your choice (1 or 2): ");

    scanf("%d",&op);
    switch (op)
     {
     case 1:
     printf("\n\tEnter the elements: \n");
     for(i = 0; i < size; i++)
     {
        printf("\t\t");
        scanf("%d", &a[i]);
        printf("\n");
     }
     clrscr();
     break;

     case 2:
     sort(a, size);
     break;
     }

    loop1:
    printf("\n\n");
    printf("\n\tEnter element to be searched: ");
    scanf("%d", &key);
    binary(a, 0, size, key);

    printf("\n\n\n\tWould you like to try again? ");
   printf("\n\t  1. Yes with same list.");
   printf("\n\t  2. Yes with a new list.");
   printf("\n\t  3. No.");
   printf("\n\n\tEnter your choice (1,2 or 3): ");
   scanf("%d",&ch);
```

```
    switch(ch)
    {
     case 1:
     goto loop1;

     case 2:
     goto loop2;

     case 3:
     printf("\n\n\t   Exiting... Press Enter again!");
     break;
    }

     getch();
}
```

OUTPUT: