Week 1

Question 1:

```
#include <iostream>
using namespace std;
int main()
{
   int ch;
   cout<<"enter the number of test cases"<<endl;
   cin>>ch;
   while(ch--)
   {
      int n,i,key,ctr=0;
   cout<<"enter the number of elements"<<endl;
   cin>>n;
   int arr[n];
   cout<<"enter the array elements"<<endl;
   for(i=0;i<n;i++)
      cin>>arr[i];
      cout<<"enter the key"<<endl;
      cin>>key;
   for(i=0;i<n;i++)
      {
         if(arr[i]==key)
      {ctr=1;
      break;}
      }
 if(ctr==1)
   cout<<"present "<<i+1<<endl;
```

```
 else
       cout<<"not present"<<i<<endl;
}
return 0;
}
```

Output:

```
enter the number of test cases
3
enter the number of elements
8
enter the array elements
34 35 65 31 25 89 64 30
enter the key
89
present 6
enter the number of elements
5
enter the array elements
977 354 244 546 355
enter the key
244
present 3
enter the number of elements
6
enter the array elements
23 64 13 67 43 56
enter the key
63
not present 6

Process returned 0 (0x0)   execution time : 70.538 s
Press any key to continue.
```

Question 2:

```
#include<iostream>
using namespace std;
void linear_search(int arr[],int n,int key)
{
   int comparisions=0,flag=0;
   for (int i=0;i<n;i++)
   {
      comparisions++;
      if (arr[i]==key)
      {
         cout<<"Present"<<" "<<comparisions<<endl;
         flag=1;
         break;
      }
   }
   if (flag==0)
     cout<<"Not Present"<<" "<<comparisions<<endl;
}
int main()
{
   int t;
   cout<<"enter the number of test cases"<<endl;
   cin>>t;
   while (t--)
   {
      int n;
      cout<<"enter the number of elements"<<endl;
      cin>>n;
```

```
        int arr[n];
        cout<<"enter the array elements"<<endl;
        for (int i=0;i<n;i++)
          cin>>arr[i];
        int key;
        cout<<"enter the element to be searched"<<endl;
        cin>>key;
        linear_search(arr,n,key);
    }
}
```

Output:

```
enter the number of test cases
3
enter the number of elements
8
enter the array elements
34 35 65 31 25 89 64 30
enter the element to be searched
89
Present 6
enter the number of elements
5
enter the array elements
977 354 244 546 355
enter the element to be searched
244
Present 3
enter the number of elements
6
enter the array elements
23 64 13 67 43 56
enter the element to be searched
63
Not Present 6

Process returned 0 (0x0)   execution time : 54.593 s
Press any key to continue.
```

Question 3:

```
#include<iostream>
#include<math.h>
using namespace std;
void Jump_search(int arr[],int n,int key)
{
   int comparisions=0,flag=0;
   int step=sqrt(n),old=0;
   while (arr[step-1]<key)
   {
      comparisions++;
      old=step;
      step+=sqrt(n);

      if (step>n-1)
        step=n;
   }
   for (int i=old;i<step;i++)
   {
      comparisions++;
      if (arr[i]==key)
      {
         cout<<"Present"<<" "<<comparisions<<endl;
         flag=1;
         break;
      }
   }
   if (flag==0)
      cout<<"Not Present"<<" "<<comparisions-1<<endl;
```

```
}
int main()
{
   int t;
   cout<<"enter the number of test cases"<<endl;
   cin>>t;
   while (t--)
   {
      int n;
      cout<<"enter the number of elements"<<endl;
      cin>>n;
      int arr[n];
      cout<<"enter the array elements"<<endl;
      for (int i=0;i<n;i++)
        cin>>arr[i];
      int key;
      cin>>key;
      Jump_search(arr,n,key);
   }
}
```

Output:

```
enter the number of test cases
3
enter the number of elements
5
enter the array elements
12 23 36 39 41
41
Present 3
enter the number of elements
8
enter the array elements
21 39 40 45 51 54 68 72
69
Not Present 4
enter the number of elements
10
enter the array elements
101 246 438 561 796 896 899 4644 7999 8545
7999
Present 5

Process returned 0 (0x0)   execution time : 74.453 s
Press any key to continue.
```