PROBLEM :01

```
#include<stdio.h>
int main()
{

   int a[100],b,i;
   scanf("%d",&b);
   for(i=0;i<b;i++){
      scanf("%d",&a[i]);

   }
   int max = a[0];

   for(i=1;i<b;i++){
      if(a[i]>max)
      {

         max=a[i];
      }
   }
   printf("%d",max);
}
```

PROBLEM :02

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

```
int binSearch(int a[], int L, int R, int key) {
    if (L <= R) {
        int mid = L + (R - L) / 2;

        if (a[mid] == key) {
            return 1;
        } else if (a[mid] < key) {
            return binSearch(a, mid + 1, R, key);
        } else {
            return binSearch(a, L, mid - 1, key);
        }
    }

    return 0;
}

int main() {
    int m, p;
    scanf("%d %d", &m, &p);
    int a[m];

    for (int i = 0; i < m; i++) {
        scanf("%d", &a[i]);
    }

    if (binSearch(a, 0, m - 1, p)) {
        printf("true\n");
    } else {
        printf("false\n");
```

```
    }

    return 0;
}
```

PROBLEM :03

```
#include <stdio.h>
int main()
{
    int a;
    while (1) {
        scanf("%d", &a);
        if (a == 0) {
            break;
        }
        int ans = g(a);
        printf("%d\n", ans);
    }
    return 0;
}

int g(int a) {
    if (a == 0) {
        return 0;
    }
    if (a % 9 == 0) {
```

```
        return 9;
    }
    return a % 9;
}
```

PROBLEM :04

```
#include <stdio.h>
int main() {
    int a,k;
    scanf("%d", &a);
    while (a--) {
        int b;
        scanf("%d", &b);
        int carry[b];
        for ( k = 0; k < b; k++) {
            scanf("%d", &carry[k]);
        }
        int swap = 0,i,j;
        for (i = 0; i < b - 1; i++) {
            for ( j = 0; j < b - i - 1; j++) {
                if (carry[j] > carry[j + 1]) {
                    int count = carry[j];
                    carry[j] = carry[j + 1];
                    carry[j + 1] = count;
                    swap++;
                }
```

```
            }
        }
        printf("Optimal train swapping takes %d swaps.\n", swap);
    }
    return 0;
}
```