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Sem: 1st

Assignment-3

Q1: Write a program to input the elements in an array and calculate the sum and average.

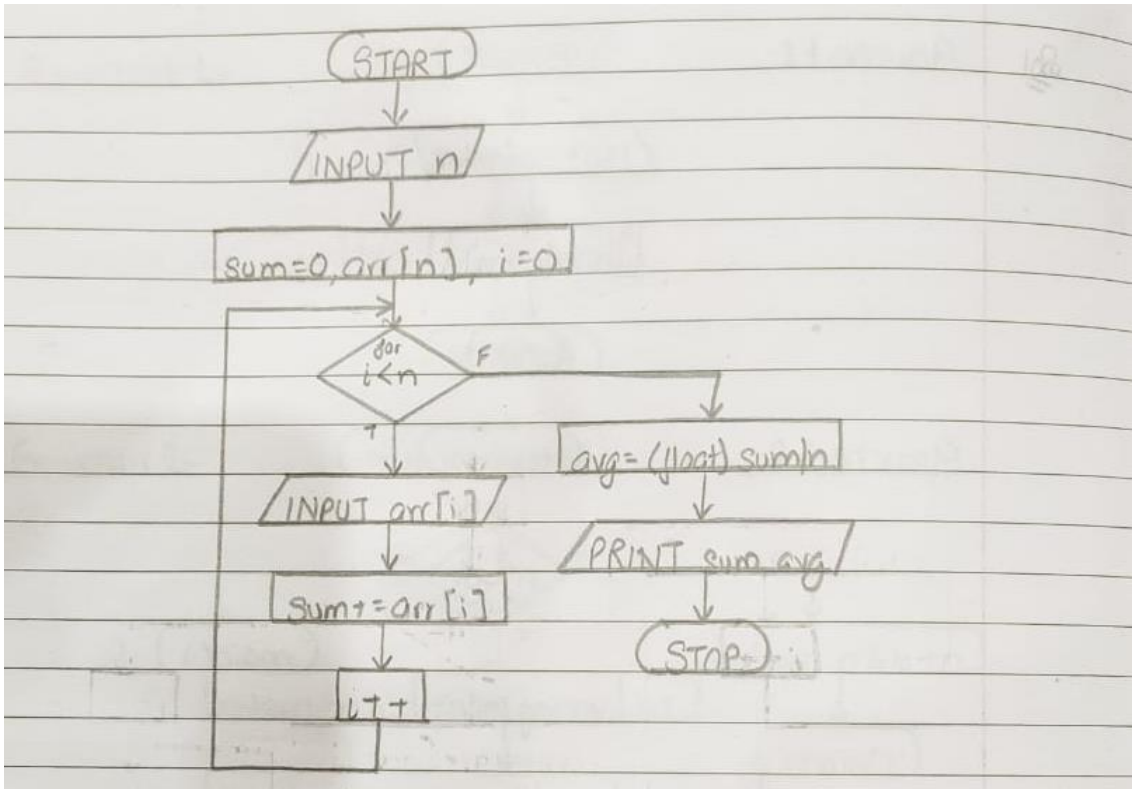
SOURCE CODE

```c
#include<stdio.h>
int main() {
  printf("------------DETAILS------------\n");
  printf("Name: Deepanshu Gupta\nRoll No.: 51\n");
  printf("------------OUTPUT-------------\n");
  int i, n, sum=0;
  float avg;
  printf("Enter the length of array: ");
  scanf("%d", &n);
  int arr[n];
  for (i=0; i<n; i++) {
    printf("Enter element %d: ", i+1);
    scanf("%d", &arr[i]);
    sum+=arr[i];
  } avg=(float) sum/n;
  printf("Sum = %d and Average = %f\n", sum, avg);
  return 0;
}
```

OUTPUT

```
PS C:\Users\Deepanshu\Desktop\WarIsOn> ./a.exe
------------DETAILS------------
Name: Deepanshu Gupta
Roll No.: 51
------------OUTPUT-------------
Enter the length of array: 5
Enter element 1: 10
Enter element 2: 20
Enter element 3: 30
Enter element 4: 40
Enter element 5: 50
Sum = 150 and Average = 30.000000
```

FLOWCHART



Q2: Write a program to input the elements in an array and print the elements in reverse order.

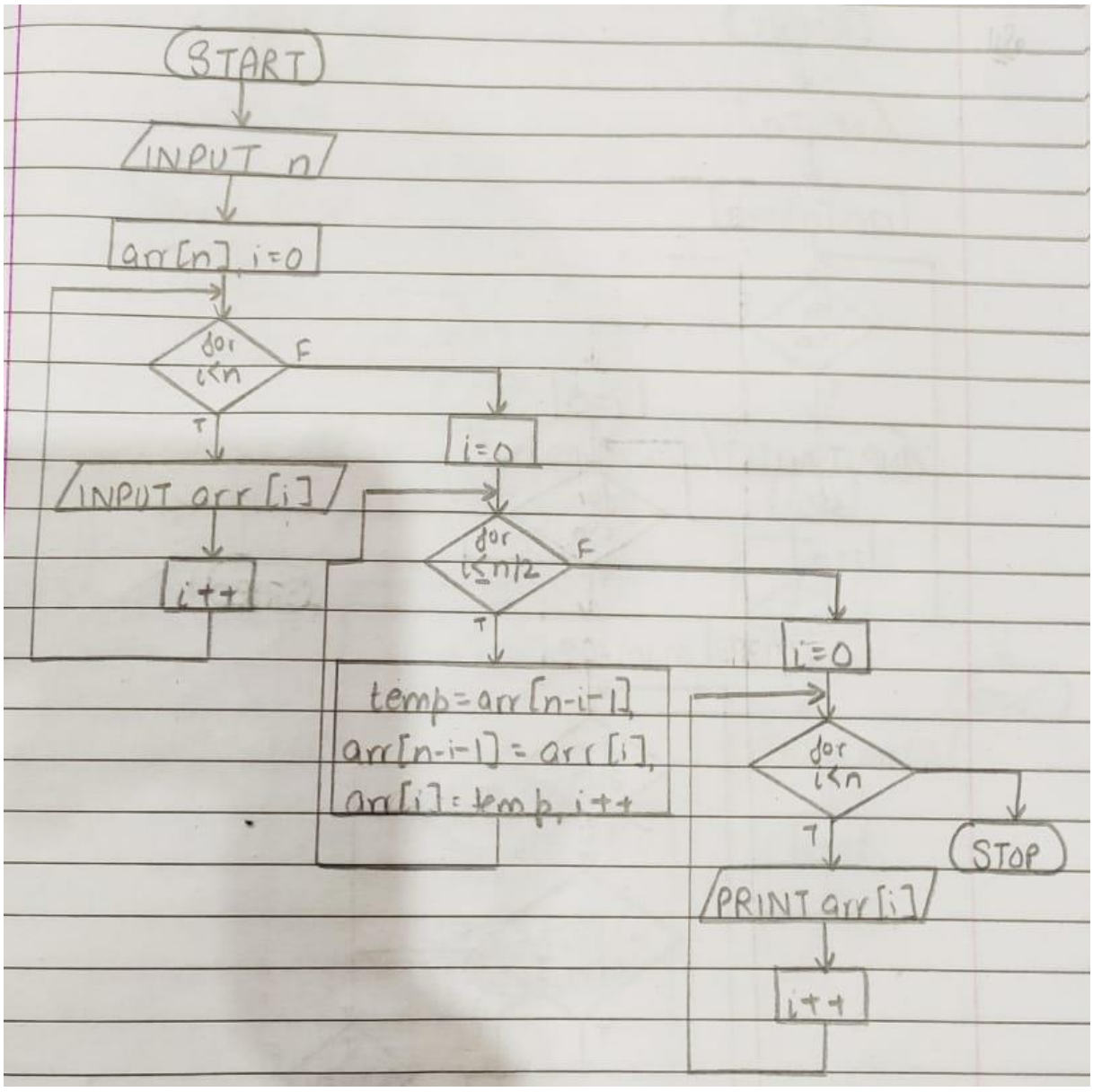
SOURCE CODE

```
#include<stdio.h>
int main() {
  printf("------------DETAILS------------\n");
  printf("Name: Deepanshu Gupta\nRoll No.: 51\n");
  printf("------------OUTPUT-------------\n");
  int i, n, temp;
  printf("Enter the length of array: ");
  scanf("%d", &n);
  int arr[n];
  for (i=0; i<n; i++) {
    printf("Enter element %d: ", i+1);
    scanf("%d", &arr[i]);
  } for (i=0; i<=n/2; i++)  {
    temp=arr[n-i-1];
    arr[n-i-1]=arr[i];
    arr[i]=temp;
  }  printf("Reverse Array: ");
  for (i=0; i<n; i++)
    printf("%d\t", arr[i]);
  return 0;
}
```

OUTPUT

```
PS C:\Users\Deepanshu\Desktop\WarIsOn> ./a.exe
------------DETAILS------------
Name: Deepanshu Gupta
Roll No.: 51
------------OUTPUT-------------
Enter the length of array: 5
Enter element 1: 1
Enter element 2: 3
Enter element 3: 5
Enter element 4: 7
Enter element 5: 9
Reverse Array: 9       7       5       3       1
```

FLOWCHART



Q3: Write a program to find the largest and smallest elements in an array.

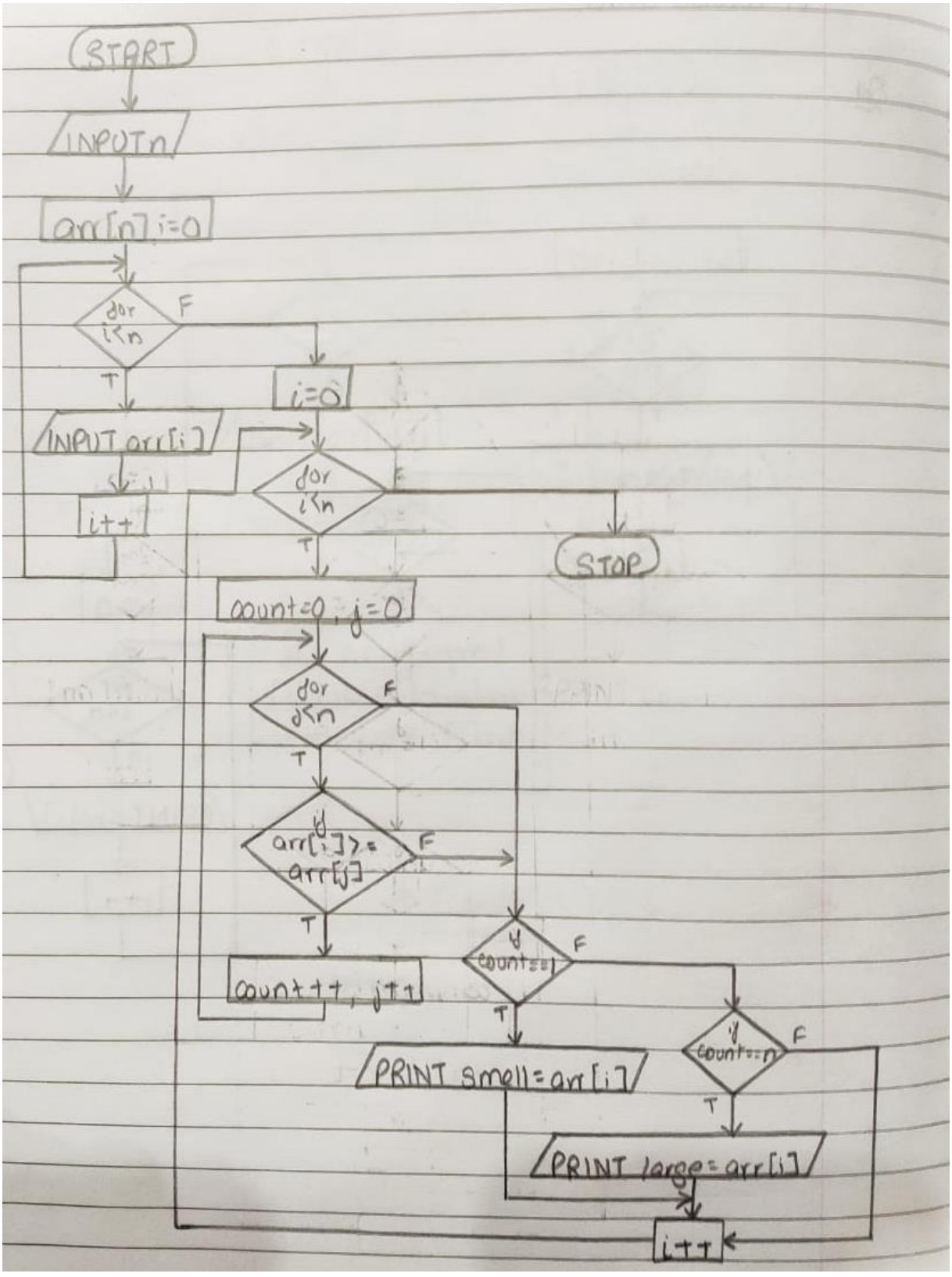
SOURCE CODE

```c
#include<stdio.h>
int main() {
  printf("------------DETAILS------------\n");
  printf("Name: Deepanshu Gupta\nRoll No.: 51\n");
  printf("------------OUTPUT-------------\n");
  int i, n, j;
  printf("Enter the length of array: ");
  scanf("%d", &n);
  int arr[n];
  for (i=0; i<n; i++) {
    printf("Enter element %d: ", i+1);
    scanf("%d", &arr[i]);
  }
  for (i=0; i<n; i++) {
    int count=0;
    for (j=0; j<n; j++) {
      if (arr[i]>=arr[j])
        count++;
    }
    if (count==1)
      printf("Smallest Element = %d\n", arr[i]);
    else if (count==n)
      printf("Largest Element = %d\n", arr[i]);
  }
  return 0;
}
```

OUTPUT

```
PS C:\Users\Deepanshu\Desktop\WarIsOn> ./a.exe
------------DETAILS------------
Name: Deepanshu Gupta
Roll No.: 51
------------OUTPUT-------------
Enter the length of array: 5
Enter element 1: 2
Enter element 2: 9
Enter element 3: 4
Enter element 4: 1
Enter element 5: 6
Largest Element = 9
Smallest Element = 1
```

FLOWCHART


START
INPUT n
arr[n], i=0
for i<n
F
T
INPUT arr[i]
i++
i=0
for i<n
F
T
STOP
count=0, j=0
for j<n
F
T
if arr[i]>= arr[j]
F
T
count++, j++
if count==1
F
T
PRINT small=arr[i]
if count==n
F
T
PRINT large=arr[i]
i++

Q4: Write a program to sort the elements of array in ascending order.

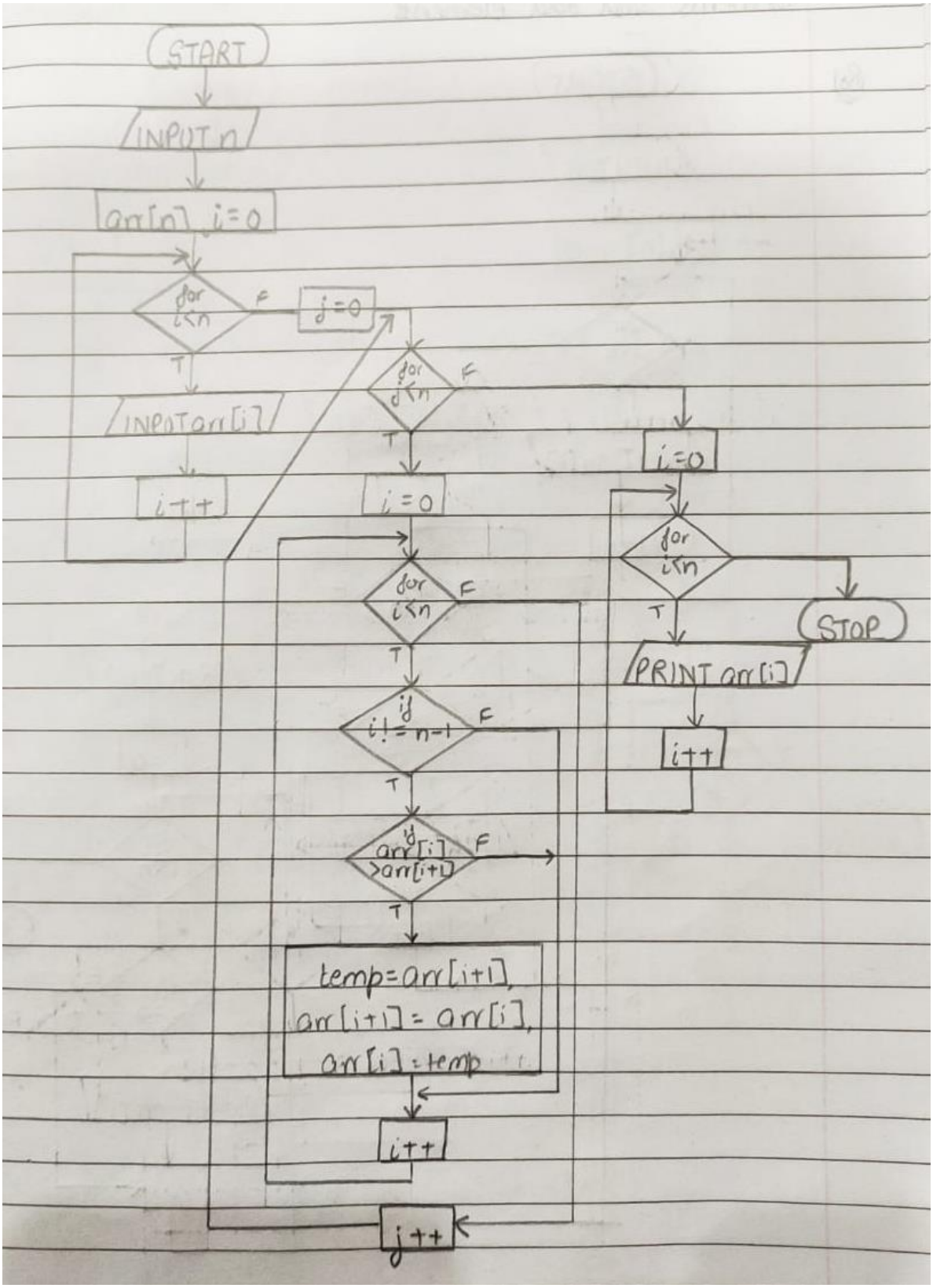
SOURCE CODE

```c
#include<stdio.h>
int main() {
  printf("------------DETAILS------------\n");
  printf("Name: Deepanshu Gupta\nRoll No.: 51\n");
  printf("------------OUTPUT-------------\n");
  int i, j, n, temp;
  printf("Enter the length of array: ");
  scanf("%d", &n);
  int arr[n];
  for (i=0; i<n; i++) {
    printf("Enter element %d: ", i+1);
    scanf("%d", &arr[i]);
  }  for (j=0; j<n; j++) {
    for (i=0; i<n; i++) {
      if (i!=n-1){
        if (arr[i]>arr[i+1]) {
          temp=arr[i+1];
          arr[i+1]=arr[i];
          arr[i]=temp;
    } } }
  }  printf("Sorted Array: \t");
  for (i=0; i<n; i++)
    printf("%d\t", arr[i]);
  return 0;
}
```

OUTPUT

```
PS C:\Users\Deepanshu\Desktop\WarIsOn> ./a.exe
------------DETAILS------------
Name: Deepanshu Gupta
Roll No.: 51
------------OUTPUT-------------
Enter the length of array: 5
Enter element 1: 9
Enter element 2: 5
Enter element 3: 1
Enter element 4: 3
Enter element 5: 7
Sorted Array:   1       3       5       7       9
```

FLOWCHART


START
INPUT n
arr[n], i=0
for i<n
F
T
INPUT arr[i]
i++
j=0
for j<n
F
T
i=0
for i<n
F
T
if i != n-1
F
T
if arr[i] > arr[i+1]
F
T
temp=arr[i+1],
arr[i+1] = arr[i],
arr[i] = temp
i++
j++
i=0
for i<n
T
STOP
PRINT arr[i]
i++

Q5: Write a program to input the elements of array and print the even and odd elements.

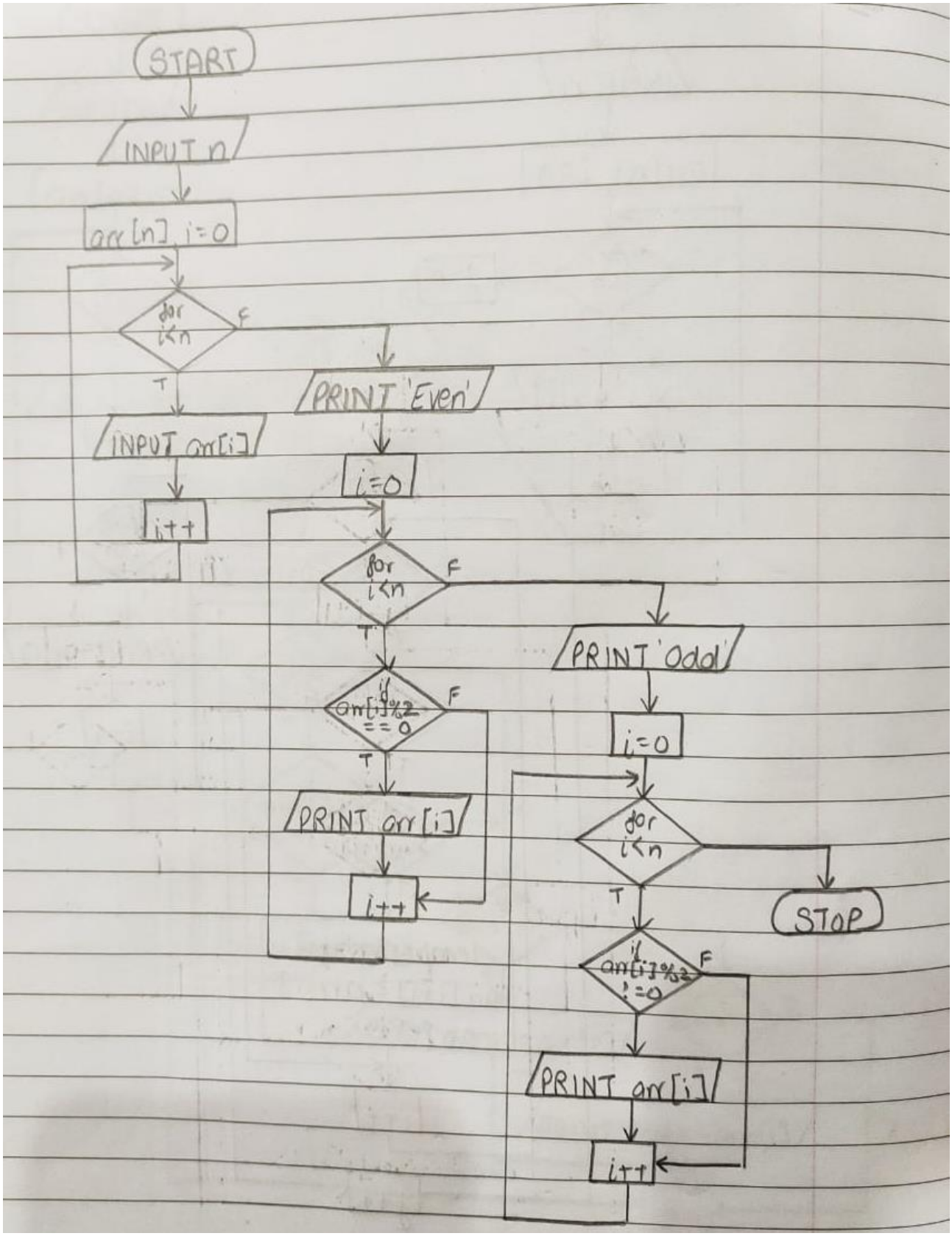
SOURCE CODE

```c
#include<stdio.h>
int main() {
  printf("------------DETAILS------------\n");
  printf("Name: Deepanshu Gupta\nRoll No.: 51\n");
  printf("------------OUTPUT-------------\n");
  int i, n;
  printf("Enter the length of array: ");
  scanf("%d", &n);
  int arr[n];
  for (i=0; i<n; i++) {
    printf("Enter element %d: ", i+1);
    scanf("%d", &arr[i]);
  }  printf("Even Elements: \t");
  for (i=0; i<n; i++) {
    if (arr[i]%2==0)
      printf("%d\t", arr[i]);
  }  printf("\nOdd Elements: \t");
  for (i=0; i<n; i++) {
    if (arr[i]%2!=0)
      printf("%d\t", arr[i]);
  }  printf("\n");
  return 0;
}
```

OUTPUT

```
PS C:\Users\Deepanshu\Desktop\WarIsOn> ./a.exe
------------DETAILS------------
Name: Deepanshu Gupta
Roll No.: 51
------------OUTPUT-------------
Enter the length of array: 8
Enter element 1: 1
Enter element 2: 5
Enter element 3: 2
Enter element 4: 8
Enter element 5: 3
Enter element 6: 4
Enter element 7: 7
Enter element 8: 6
Even Elements:  2       8       4       6
Odd Elements:   1       5       3       7
```

FLOWCHART


START
INPUT n
arr[n], i=0
for i<n
F
T
INPUT arr[i]
i++
PRINT 'Even'
i=0
for i<n
F
T
if arr[i]%2 == 0
F
T
PRINT arr[i]
i++
PRINT 'Odd'
i=0
for i<n
T
STOP
if arr[i]%2 != 0
F
PRINT arr[i]
i++

Q6: Develop a program to print the elements of array by eliminating the duplicate numbers.

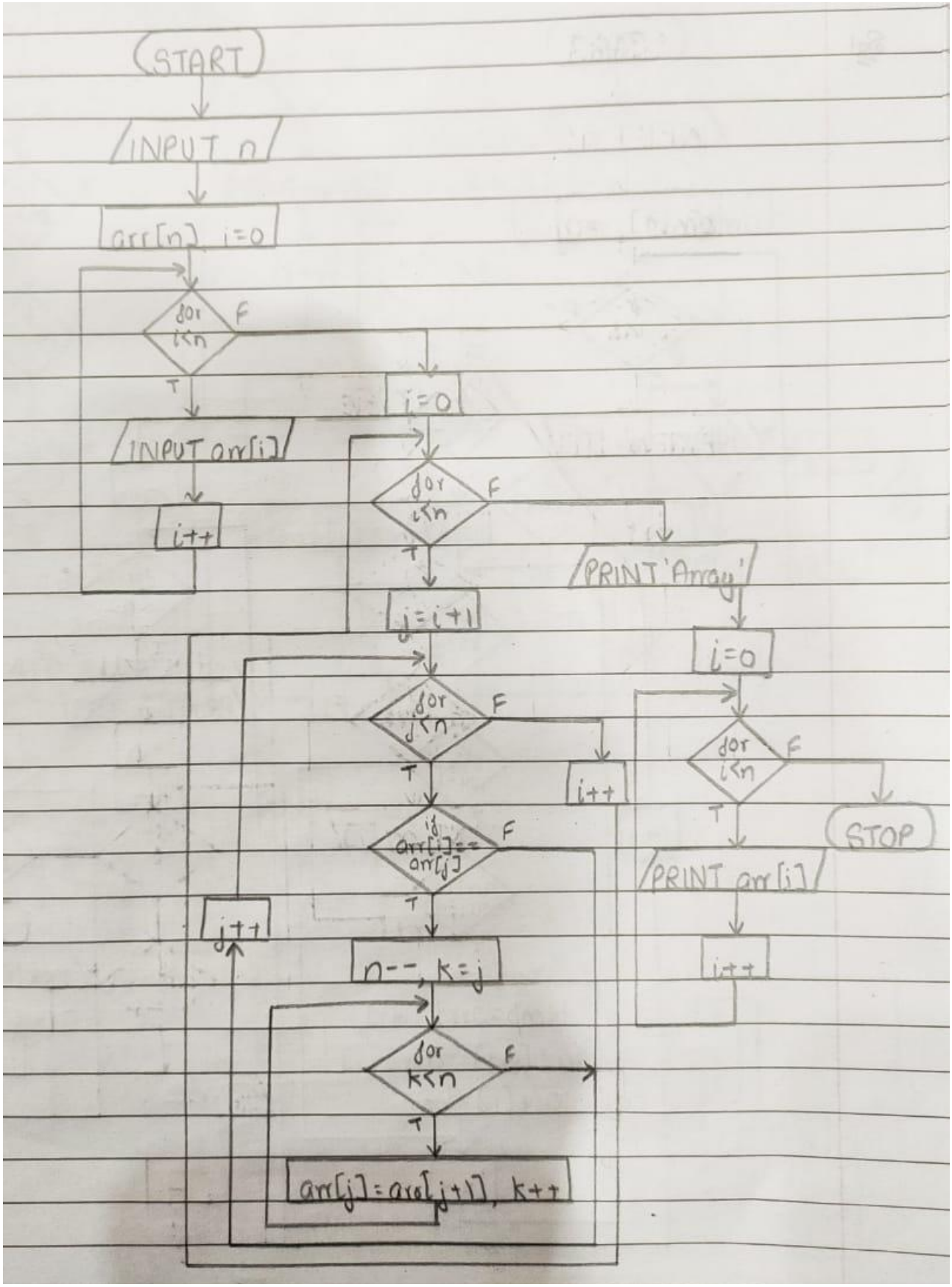
SOURCE CODE

```c
#include<stdio.h>
int main() {
  printf("------------DETAILS------------\n");
  printf("Name: Deepanshu Gupta\nRoll No.: 51\n");
  printf("------------OUTPUT-------------\n");
  int i, j, k, n;
  printf("Enter the length of array: ");
  scanf("%d", &n);
  int arr[n];
  for (i=0; i<n; i++) {
    printf("Enter element %d: ", i+1);
    scanf("%d", &arr[i]);
  }  for (i=0; i<n; i++) {
    for (j=i+1; j<n; j++) {
      if (arr[i]==arr[j]){
        n--;
        for (k=j; k<n; k++)
          arr[j]=arr[j+1];
      } }
  }  printf("Array: \t");
  for (i=0; i<n; i++)
    printf("%d\t", arr[i]);
  return 0;
}
```

OUTPUT

```
PS C:\Users\Deepanshu\Desktop\WarIsOn> ./a.exe
------------DETAILS------------
Name: Deepanshu Gupta
Roll No.: 51
------------OUTPUT-------------
Enter the length of array: 5
Enter element 1: 1
Enter element 2: 5
Enter element 3: 2
Enter element 4: 5
Enter element 5: 3
Array:  1       5       2       3
```

FLOWCHART


START
INPUT n
arr[n], i=0
for i<n
F
T
INPUT arr[i]
i++
i=0
for i<n
F
T
j=(i+1)
PRINT 'Array'
i=0
for j<n
F
T
if arr[i]==arr[j]
F
T
j++
n--, k=j
for k<n
F
T
arr[j]=arr[j+1], k++
i++
for i<n
F
T
PRINT arr[i]
i++
STOP

Q7: Develop a program to merge the elements of two sorted arrays so that the resulting array is also sorted.

SOURCE CODE

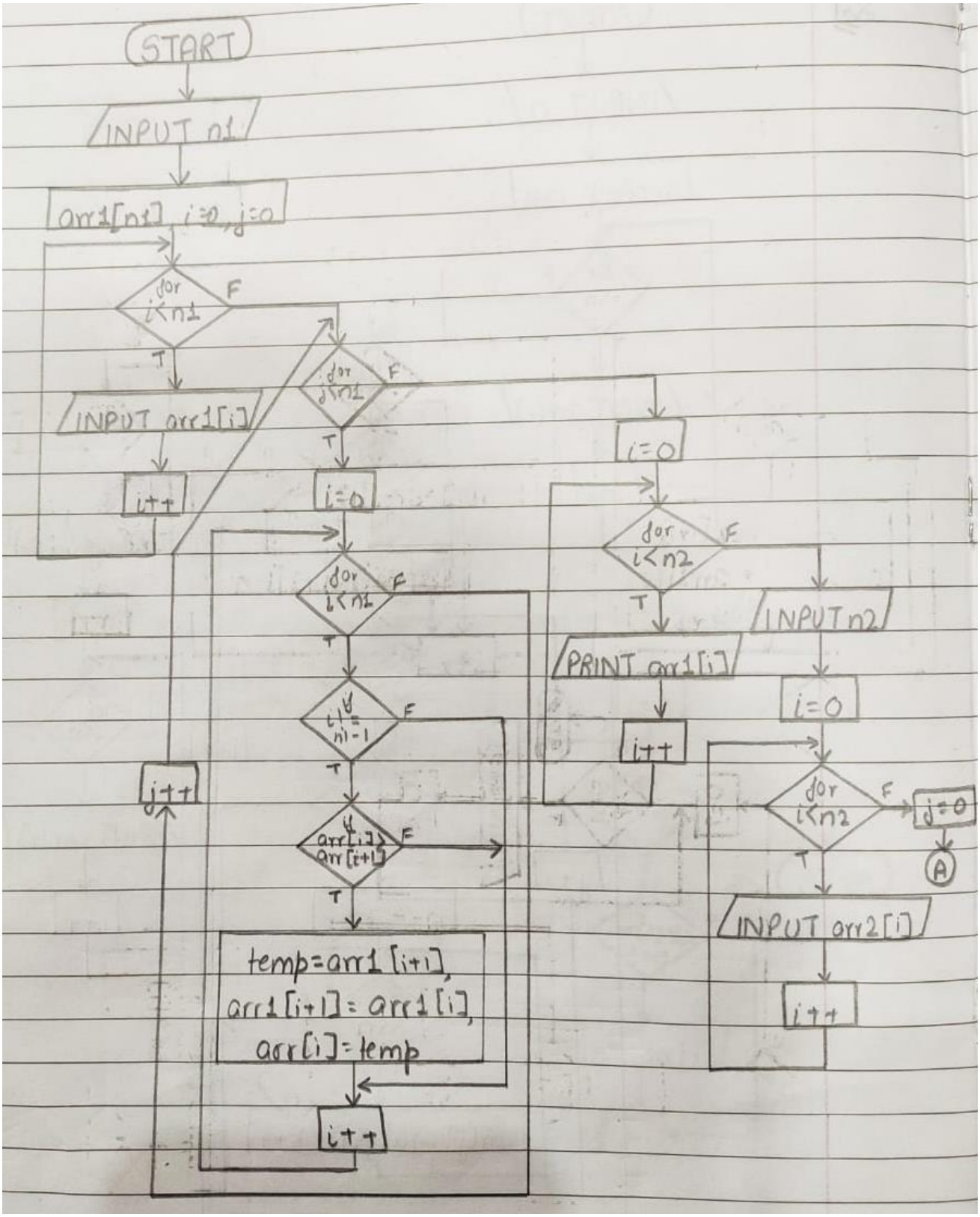
```
#include<stdio.h>
int main() {
 printf("------------DETAILS------------\n");
 printf("Name: Deepanshu Gupta\nRoll No.: 51\n");
 printf("------------OUTPUT-------------\n");
 int i, j, n1, n2, temp;
 printf("Enter the length of array 1: ");
 scanf("%d", &n1);
 int arr1[n1];
 for (i=0; i<n1; i++) {
  printf("Enter element %d: ", i+1);
  scanf("%d", &arr1[i]);
 }
 for (j=0; j<n1; j++) {
  for (i=0; i<n1; i++) {
   if (i!=n1-1) {
    if (arr1[i]>arr1[i+1]) {
     temp=arr1[i+1];
     arr1[i+1]=arr1[i];
     arr1[i]=temp;
    } } }
 } printf("Sorted Array 1: \t");
 for (i=0; i<n1; i++)
  printf("%d\t", arr1[i]);
 printf("\n");
 printf("Enter the length of array 2: ");
 scanf("%d", &n2);
 int arr2[n2];
 for (i=0; i<n2; i++) {
  printf("Enter element %d: ", i+1);
  scanf("%d", &arr2[i]);
 } for (j=0; j<n2; j++) {
  for (i=0; i<n2; i++) {
   if (i!=n2-1) {
    if (arr2[i]>arr2[i+1]) {
     temp=arr2[i+1];
     arr2[i+1]=arr2[i];
     arr2[i]=temp;
    } } }
 } printf("Sorted Array 2: \t");
```

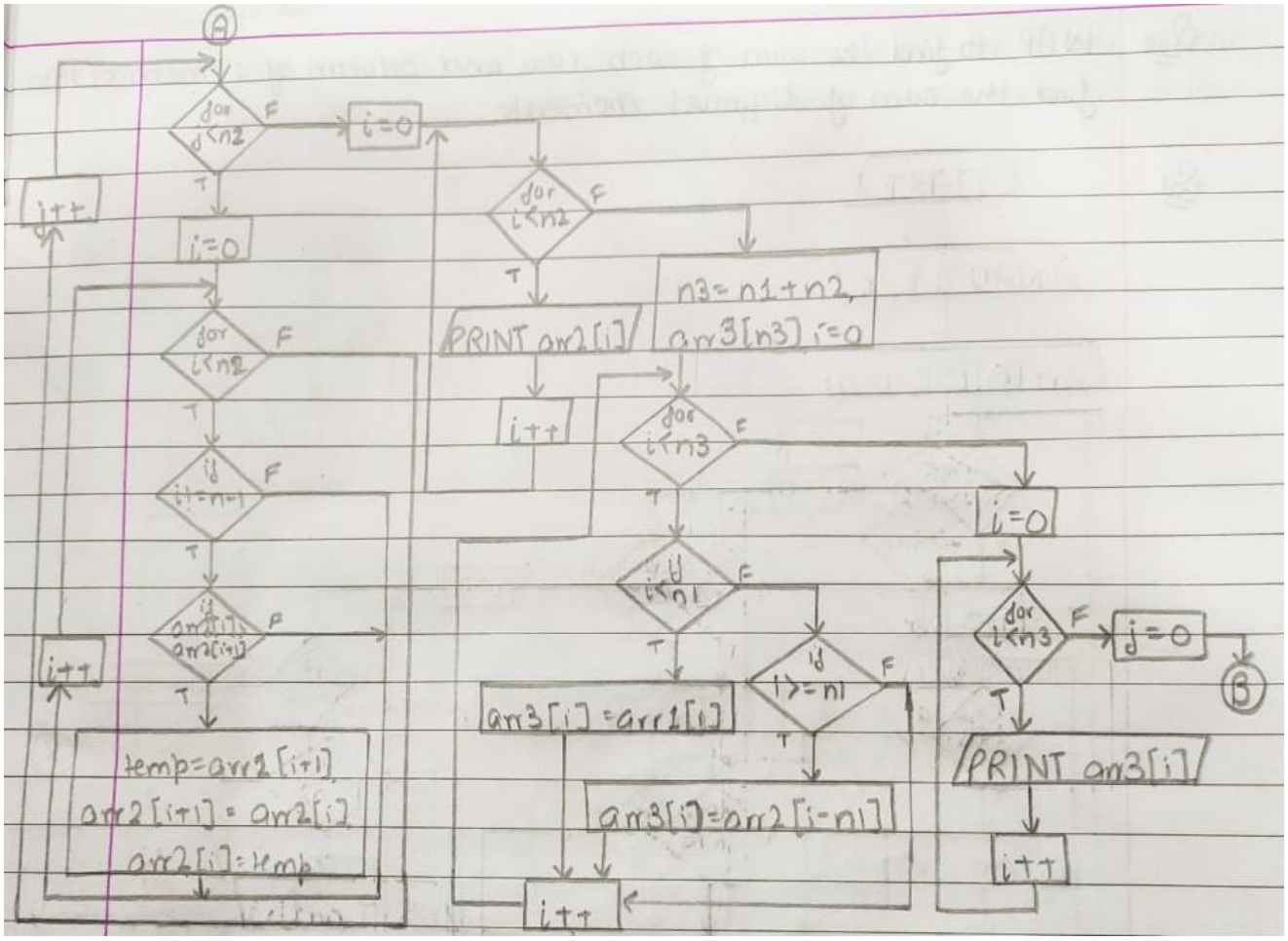
```
 for (i=0; i<n2; i++)
  printf("%d\t", arr2[i]);
 printf("\n");
 int n3=n1+n2;
 int arr3[n3];
 for (i=0; i<n3; i++) {
  if (i<n1)
    arr3[i]=arr1[i];
  else if (i>=n1)
    arr3[i]=arr2[i-n1];
 }  printf("Merged Array 3: \t");
 for (i=0; i<n3; i++)
  printf("%d\t", arr3[i]);
 printf("\n");
 for (j=0; j<n3; j++) {
  for (i=0; i<n3; i++) {
    if (i!=n3-1) {
      if (arr3[i]>arr3[i+1]) {
        temp=arr3[i+1];
        arr3[i+1]=arr3[i];
        arr3[i]=temp;
     } } }
 }  printf("Sorted Array 3: \t");
 for (i=0; i<n3; i++)
  printf("%d\t", arr3[i]);
 printf("\n");
 return 0;
}
```

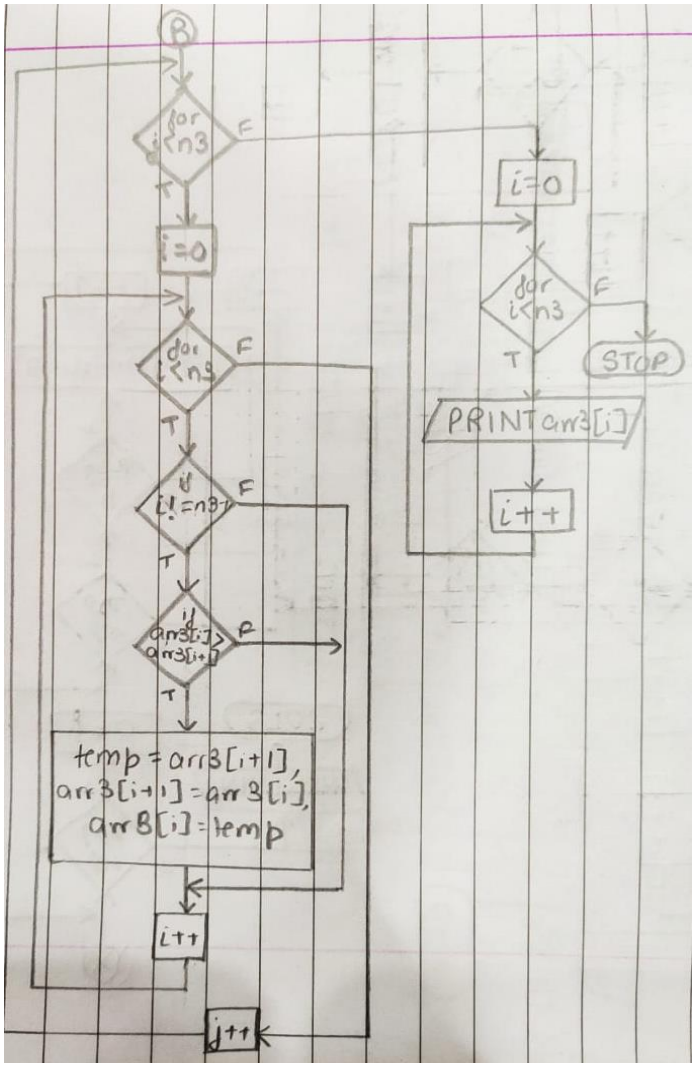
OUTPUT

```
PS C:\Users\Deepanshu\Desktop\WarIsOn> ./a.exe
------------DETAILS------------
Name: Deepanshu Gupta
Roll No.: 51
------------OUTPUT-------------
Enter the length of array 1: 7
Enter element 1: 1
Enter element 2: 5
Enter element 3: 9
Enter element 4: 3
Enter element 5: 7
Enter element 6: 6
Enter element 7: 4
Sorted Array 1:         1       3       4       5       6       7       9
Enter the length of array 2: 5
Enter element 1: 2
Enter element 2: 5
Enter element 3: 8
Enter element 4: 6
Enter element 5: 1
Sorted Array 2:         1       2       5       6       8
Merged Array 3:         1       3       4       5       6       7       9       1       2       5       6       8
Sorted Array 3:         1       1       2       3       4       5       5       6       6       7       8       9
```

FLOWCHART


START
INPUT n1
arr1[n1] i=0, j=0
for i<n1
F
T
INPUT arr1[i]
i++
for j<n1
F
T
i=0
for i<n1
F
T
if i != n1-1
F
T
if arr[i] > arr[i+1]
F
T
temp=arr1[i+1],
arr1[i+1]=arr1[i],
arr[i]=temp
i++
j++
i=0
for i<n2
F
T
PRINT arr1[i]
i++
INPUT n2
i=0
for i<n2
F
T
j=0
A
INPUT arr2[i]
i++


A
for j<n2
F
T
i=0
j++
i=0
for i<n2
F
T
for i<n2
F
T
if i!=n-1
F
T
if arr2[i]>arr2[i+1]
F
T
temp=arr2[i+1]
arr2[i+1]=arr2[i]
arr2[i]=temp
i++
PRINT arr2[i]
i++
n3=n1+n2,
arr3[n3], i=0
for i<n3
F
T
if i<n1
F
T
arr3[i]=arr1[i]
if i>=n1
F
T
arr3[i]=arr2[i-n1]
i++
i=0
for i<n3
F
T
PRINT arr3[i]
i++
j=0
B


B
for i<n3
F
T
i=0
for i<n3
F
T
if i!=n3-1
F
T
if arr3[i]>arr3[i+1]
F
T
temp=arr3[i+1],
arr3[i+1]=arr3[i],
arr3[i]=temp
i++
j++
i=0
for i<n3
F
T
STOP
PRINT arr3[i]
i++