JOHNSON AND TROTTER METHOD

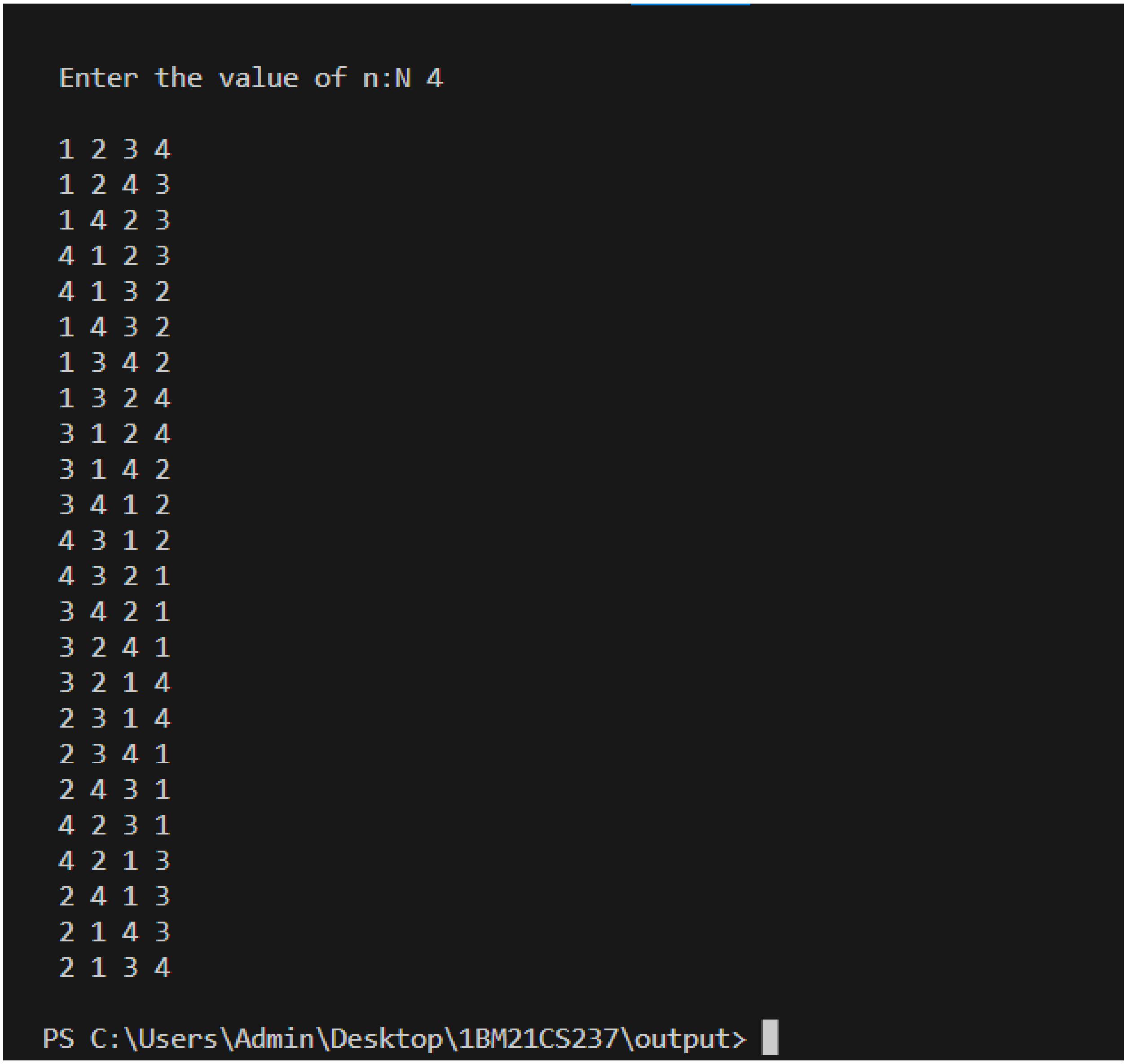
```
#include<stdio.h>
#include<conio.h>

int LEFT_TO_RIGHT= 1;
int RIGHT_TO_LEFT =0;
int searchArr(int a[], int n, int mobile)
{for (int i = 0; i < n;
i++)if (a[i] == mobile)
return i + 1;
}
int getMobile(int a[], int dir[], int n)
{int mobile_prev = 0, mobile =
0;for (int i = 0; i < n; i++) {

if (dir[a[i]-1] == RIGHT_TO_LEFT && i!=0)
{if (a[i] > a[i-1] && a[i] > mobile_prev)
{ mobile = a[i];
mobile_prev = mobile;
}
}
if (dir[a[i]-1] == LEFT_TO_RIGHT && i!=n-1) {

if (a[i] > a[i+1] && a[i] > mobile_prev)
{
mobile = a[i];
mobile_prev = mobile;
}
}
}
```

```
if (mobile == 0 && mobile_prev ==
0)return 0;
else
return mobile;
}
int printOnePerm(int a[], int dir[], int n)
{
int mobile = getMobile(a, dir,
n);int pos = searchArr(a, n,
mobile);

if (dir[a[pos - 1] - 1] == RIGHT_TO_LEFT)
{
printf("\n");
int temp;
temp = a[pos-1] ;

a[pos-1] = a[pos-
2];a[pos-2]= temp;

}

else if (dir[a[pos - 1] - 1] == LEFT_TO_RIGHT)
{
printf("\n");
int temp;
temp = a[pos] ;

a[pos] = a[pos-1];
a[pos-1]=temp;
}
for (int i = 0; i < n; i++)
{
if (a[i] > mobile)
```

```
{
if (dir[a[i] - 1] ==
LEFT_TO_RIGHT)dir[a[i] - 1] =
RIGHT_TO_LEFT;
else if (dir[a[i] - 1] ==
RIGHT_TO_LEFT)dir[a[i] - 1] =
LEFT_TO_RIGHT;
}
}

for (int i = 0; i < n; i++)
printf(" %d", a[i]);

}
int fact(int n)
{
int res = 1;
int i;
for (i = 1; i <= n;
i++)res = res * i;
return res;
}
void printPermutation(int n)
{

int a[n];
int dir[n];
printf("\n");

printf("\n");
for (int i = 0; i < n; i++)
{
a[i] = i + 1;

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

```
}
for (int i = 0; i < n; i++)
dir[i] =RIGHT_TO_LEFT;
for (int i = 1; i < fact(n); i++)

printOnePerm(a, dir, n);
printf("\n");
}
int main()
{
int n;
printf("\n Enter the value of n:N\t");
scanf("%d",&n);
printf("\n");
printPermutation(n);
printf("\n");
return 0;
}
```

OUTPUT:



```
  Enter the value of n:N 4

  1 2 3 4
  1 2 4 3
  1 4 2 3
  4 1 2 3
  4 1 3 2
  1 4 3 2
  1 3 4 2
  1 3 2 4
  3 1 2 4
  3 1 4 2
  3 4 1 2
  4 3 1 2
  4 3 2 1
  3 4 2 1
  3 2 4 1
  3 2 1 4
  2 3 1 4
  2 3 4 1
  2 4 3 1
  4 2 3 1
  4 2 1 3
  2 4 1 3
  2 1 4 3
  2 1 3 4

PS C:\Users\Admin\Desktop\1BM21CS237\output>
```