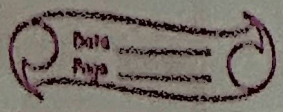
13/06/24

Johnson-Trotter Algorithm




```
#include<stdio.h>
#include<stdlib.h>
int flag=0;
void swap(int *a, int *b)
{
 int t, *a;
 *a=*b;
 *b=*t;
}
int search(int arr[], int num, int mobile)
{
 int g;
 for(g=0; g<num; g++)
 {
   if(arr[g]==mobile)
   return g+1;
   else
   {
     flag++;
   }
  }
 }
 return -1; }
int find_Mobile(int arr[], int a[], int num)
{
  int mobile=0;
  int mobile_p=0;
  int i;
  for(i=0; i<num; i++)
  {
  if(a[arr[i]-1]==0) && i!=0)
  {
```

```
if(arr[i] > arr[i-1] && arr[i] > mobile_p)
{
  mobile = arr[i];
  mobile_p = mobile;
}
else
{
  flag++;
}
else if((a(arr[i]-1 == 1) && i != num-1)
{
  if(arr[i] > arr[i+1] && arr[i] > mobile_p)
  {
    mobile = arr[i];
    mobile_p = mobile;
  }
  else
  {
    flag++;
  }
}
else
{
  flag++;
}
if(mobile_p == 0) && (mobile == 0)
  return 0;
else
  return mobile;
}
```

```
int main()
{
 int num=0;
 int i;
 int j;
 int z=0;
 printf("Johnson Trotter algorithm to find all
 permutations of given numbers \n");
 printf("Enter the number\n");
 scanf("%d", &num);
 int arr[num], d[num];
 z= factorial(num);
 printf("Total permutations = %d", z);
 printf("\n All possible permutations are: \n");
 for(i=0; i<num; i++)
 {
  d[i]=0;
  arr[i]=i+1;
  printf("%d", arr[i]);
 }
 printf("\n");
 for(j=1; j<z; j++)
 {
  permutations(arr, d, num);
  printf("\n");
  return 0;
 }
}
```

Output

Enter the number: 3

Total permutations 6

All possible permutations are:

1 2 3

1 3 2

3 1 2

3 2 1

2 3 1

2 1 3

Enter the number: 4

Total permutations = 24

All possible permutations are

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

2 4 1 3

2 1 4 3

2 1 3 4

Substring matching

```
#include<stdio.h>
#include<string.h>
int substringMatch(char *text, char *pattern){
  int textLength = strlen(text);
  int patternLength = strlen(pattern);
  for(int i=0; i<=textLength-patternLength; i++){
    int j;
    for(j=0; j<patternLength; j++)
      if(text[i+j] != pattern[j])
        break;
    if(j == patternLength)
      return i;
  }
  return -1;
}
int main(){
  char text[100], pattern[100];
  printf("Enter the main text");
  scanf("%s", text);
  printf("Enter the pattern to search");
  scanf("%s", pattern);
  int index = substringMatch(text, pattern);
  if(index != -1)
    printf("Substring found at index : %d\n", ind
  else
    printf("Substring not found\n");
  return 0;
}
```

Output:

Enter the main text : FUNWORLD
Enter the pattern to search : WORLD
Substring found at index : 3

Leetcode: Find the kth largest integer in array

```
int cmp(const void *a, const void *b) {
    const char *str1 = *(const char **)a;
    const char *str2 = *(const char **)b;
    if (strlen(str1) == strlen(str2)) {
        return strcmp(str1, str2);
    }
    return strlen(str1) - strlen(str2);
}
char *kthLargestNumber(char **nums, int numsSize, int k) {
    qsort(nums, numsSize, sizeof(char *), cmp);
    return nums[numsSize - k];
}
```

Output:

Case 1
Input
nums = ["0", "0"]
k = 2
Output
"0"
Expected
"0"

Case 2
Input
nums = ["3", "6", "7", "10"]
k = 4
Output
"3"
Expected
"3"

Case 3
Input
nums = ["2", "21", "12", "1"]
k = 3
Output
"2"
Expected
"2"

19/6/24