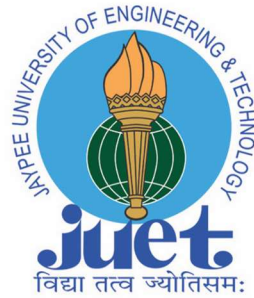


# Jaypee University of Engineering and Technology, Guna



## [LAB ACTIVITY 4]

DATA STRUCTURES LAB

(18B17CI371)

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Enroll No. : 201B172

1. Write a C program to reverse the elements of an array.

<https://www.hackerrank.com/challenges/reverse-array-c/problem>

**Solution:**

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

```
#include <stdlib.h>
```

```
int main()
```

```
{
```

```
    int num, *arr, i;
```

```
    scanf("%d", &num);
```

```
    arr = (int*) malloc(num * sizeof(int));
```

```
    for(i = 0; i < num; i++) {
```

```
        scanf("%d", arr + i);
```

```
    }
```

```
    /* Write the logic to reverse the array. */
```

```
    for(i = num-1; i >=0 ; i--)
```

```
        printf("%d ", *(arr + i));
```

```
    return 0;
```

```
}
```

## Output:

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\hp\Desktop\lab files DS> cd "c:\Users\hp\Desktop\lab files DS\lab3\lab4\" ; if ($?) { gcc question1.c -o question1 } ; if ($?) { .\question1 }
5
10 20 30 40 50
50 40 30 20 10
PS C:\Users\hp\Desktop\lab files DS\lab3\lab4> |
```

2. Write a C program to print the frequency of the digits in given alphanumeric string.

<https://www.hackerrank.com/challenges/frequency-of-digits-1/problem>

### Solution:

```
#include <stdio.h>
#include <string.h>
#include <math.h>
#include <stdlib.h>
#include <ctype.h>

int main() {
    char num[1000];
    int a[10]={},n;
    scanf("%s",num);
    for(int i=0;i<strlen(num);i++)
    {
```

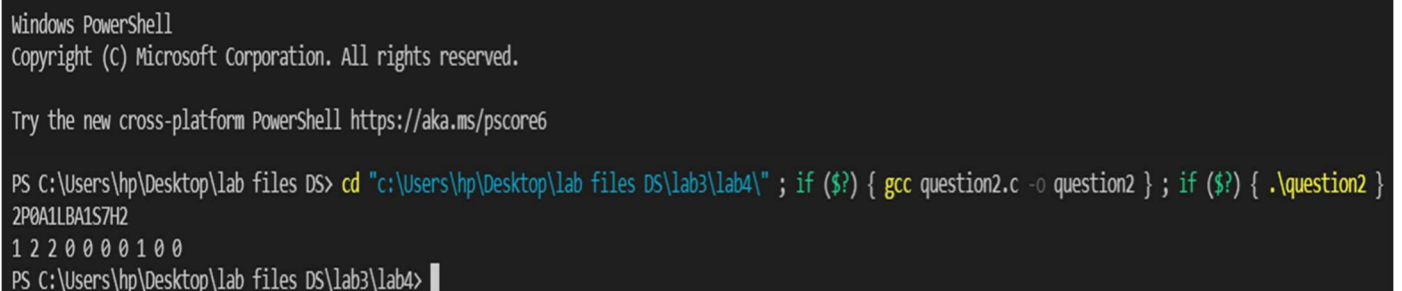
```

    if(num[i]=='0'
||num[i]=='1'||num[i]=='2'||num[i]=='3'||num[i]=='4'||num[i]=='5'||
num[i]=='6'||num[i]=='7'||num[i]=='9'||num[i]=='8' )
{
    n=(int)num[i] - 48;
    a[n]++;
}
}
for(int i=0;i<10;i++)
printf("%d ",a[i]);

return 0;
}

```

### Output:



```

Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\hp\Desktop\lab files DS> cd "c:\Users\hp\Desktop\lab files DS\lab3\lab4" ; if ($?) { gcc question2.c -o question2 } ; if ($?) { .\question2 }
2P0A1LBA1S7H2
1 2 2 0 0 0 0 1 0 0
PS C:\Users\hp\Desktop\lab files DS\lab3\lab4>

```

3. Write C program to complete “Students Marks Sum’ as mentioned below:

<https://www.hackerrank.com/challenges/students-marks-sum/problem>

### Solution:

```

#include <stdio.h>

#include <string.h>

```

```
#include <math.h>
```

```
#include <stdlib.h>
```

```
//Complete the following function.
```

```
int marks_summation(int* marks, int number_of_students, char  
gender) {
```

```
    int sum = 0;
```

```
    for (int i = (gender == 'b' ? 0 : 1); i < number_of_students; i =  
i + 2)
```

```
        sum += *(marks + i);
```

```
    return sum;
```

```
}
```

```
int main() {
```

```
    int number_of_students;
```

```
    char gender;
```

```
    int sum;
```

```
    scanf("%d", &number_of_students);
```

```
    int *marks = (int *) malloc(number_of_students * sizeof (int)  
);
```

```

for (int student = 0; student < number_of_students; student++)
) {
    scanf("%d", (marks + student));
}

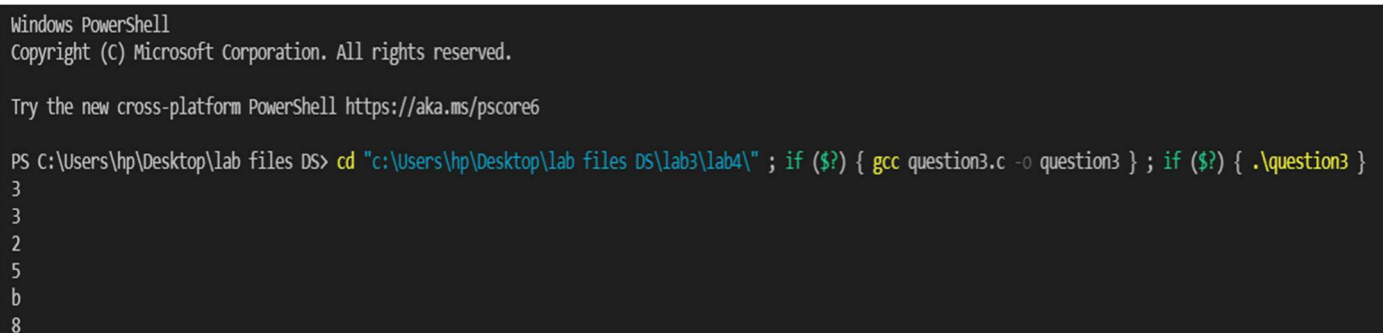
scanf(" %c", &gender);
sum = marks_summation(marks, number_of_students, gender)
;

printf("%d", sum);
free(marks);

return 0;
}

```

### Output:



```

Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\hp\Desktop\lab files DS> cd "c:\Users\hp\Desktop\lab files DS\lab3\lab4\" ; if ($?) { gcc question3.c -o question3 } ; if ($?) { .\question3 }
3
3
2
5
6
8
b

```

4. Write a C/C++ program to left rotate an array of integers by d times.

<https://www.hackerrank.com/challenges/array-left-rotation/problem>

### Solution:

```

#include <stdio.h>

```

```
#include <string.h>
```

```
#include <math.h>
```

```
#include <stdlib.h>
```

```
int main() {
```

```
    int n;
```

```
    scanf("%d",&n);
```

```
    int d;
```

```
    scanf("%d",&d);
```

```
    int *arr = malloc(sizeof(int) * n);
```

```
    for(int arr_i = 0; arr_i < n; arr_i++){
```

```
        scanf("%d",&arr[arr_i]);
```

```
    }
```

```
    int *arr2 = malloc(sizeof(int) * n);
```

```
    int curr=0;
```

```
    for(int i=d; i<n; i++) {
```

```
        arr2[curr] = arr[i];
```

```
        curr++;
```

```
    }
```

```
    for(int i=0; i<d; i++) {
```

```
        arr2[curr] = arr[i];
```

```
    curr++;  
}  
  
for(int i=0; i<n; i++) {  
    printf("%d ",arr2[i]);  
}  
  
return 0;  
}
```

### Output:

```
Windows PowerShell  
Copyright (c) Microsoft Corporation. All rights reserved.  
  
Try the new cross-platform PowerShell https://aka.ms/pscore6  
  
PS C:\Users\hp\Desktop\lab files DS> cd "c:\Users\hp\Desktop\lab files DS\lab3\lab4\" ; if ($?) { gcc question4.c -o question4 } ; if ($?) { .\question4 }  
5  
4  
1 2 3 4 5  
5 1 2 3 4  
PS C:\Users\hp\Desktop\lab files DS\lab3\lab4> █
```

5. Register for <https://infytd.infosys.com/> and then try to solve programming assignments of course “Data Structures and Algorithms using Python”