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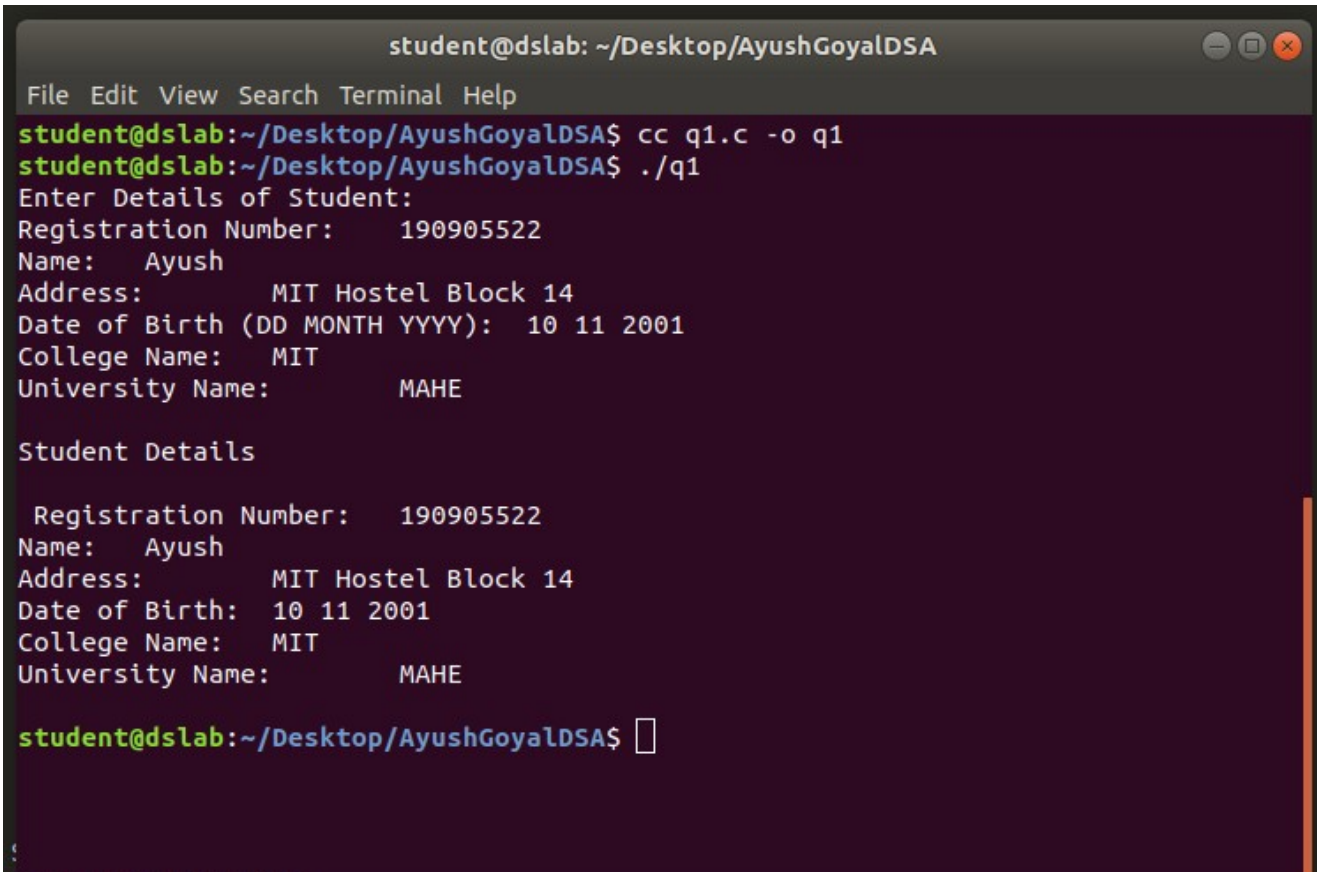
DSA Lab 2

Q1)

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

struct DOB {
	int day;
	char *month;
	int year;
};

struct STU_INFO {
	int reg_no;
	char *name;
	char adrs[20];
};

struct COLLEGE {
	char *clg_name;
	char univ_name[20];
};

struct STUDENT {
	struct DOB* dob;
	struct STU_INFO stu_info;
	struct COLLEGE clg;
};

int main()
{
	struct STUDENT *stu = (struct STUDENT*)malloc(sizeof(struct STUDENT));
	stu->dob = (struct DOB*)malloc(sizeof(struct DOB));
	stu->dob->month = (char*)malloc(sizeof(char) * 10);
	stu->stu_info.name = (char*)malloc(sizeof(char) * 20);
	stu->clg.clg_name = (char*)malloc(sizeof(char) * 50);
	printf("Enter Details of Student:\n");
	printf("Registration Number:\t");
	scanf("%d", &(stu->stu_info.reg_no));
	printf("Name:\t");
	scanf(" %s", stu->stu_info.name);
	printf("Address:\t");
	scanf(" %[^\n]s", stu->stu_info.adrs);
	printf("Date of Birth (DD MONTH YYYY):\t");
	scanf("%d", &(stu->dob->day));
	scanf(" %s", stu->dob->month);
	scanf("%d", &(stu->dob->year));
	printf("College Name:\t");
```

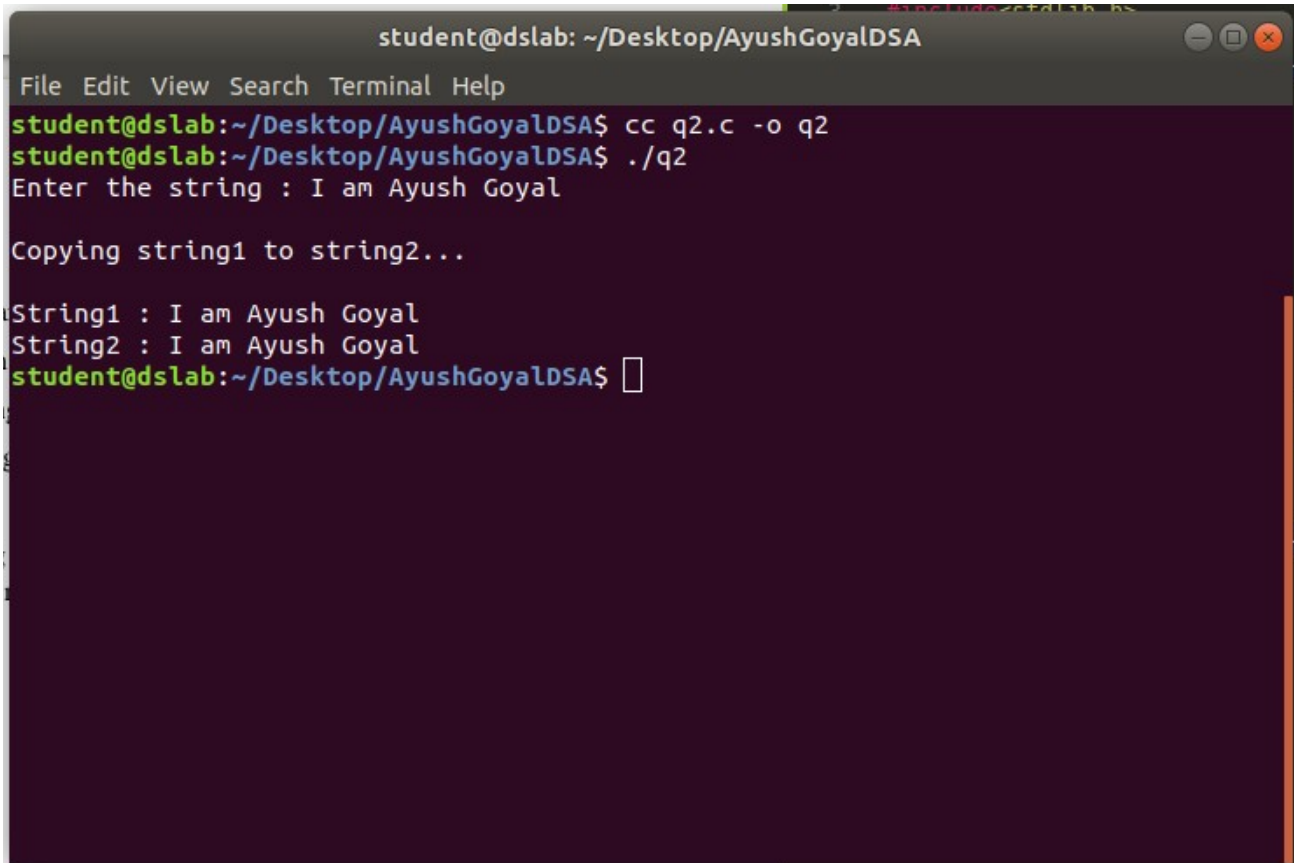
```
	scanf(" %s", stu->clg.clg_name);
	printf("University Name:\t");
	scanf(" %s", stu->clg.univ_name);
	printf("\nStudent Details\n\n Registration Number:\t%d\nName:\t%s\nAddress:\t%s\nDate of Birth:\t%d %s %d\nCollege Name:\t%s\nUniversity Name:\t%s\n\n", stu->stu_info.reg_no, stu->stu_info.name, stu->stu_info.adrs,stu->dob->day,stu->dob->month,stu->dob->year,stu->clg.clg_name,stu->clg.univ_name);
	return 0;
}
```



Q2)

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

void copy(char str1[], char str2[], int i)
{
	str2[i]=str1[i];
	if(str1[i] == '\0')
		return;
	copy(str1,str2,++i);
}

int main()
{
	char str1[100],str2[100];
```

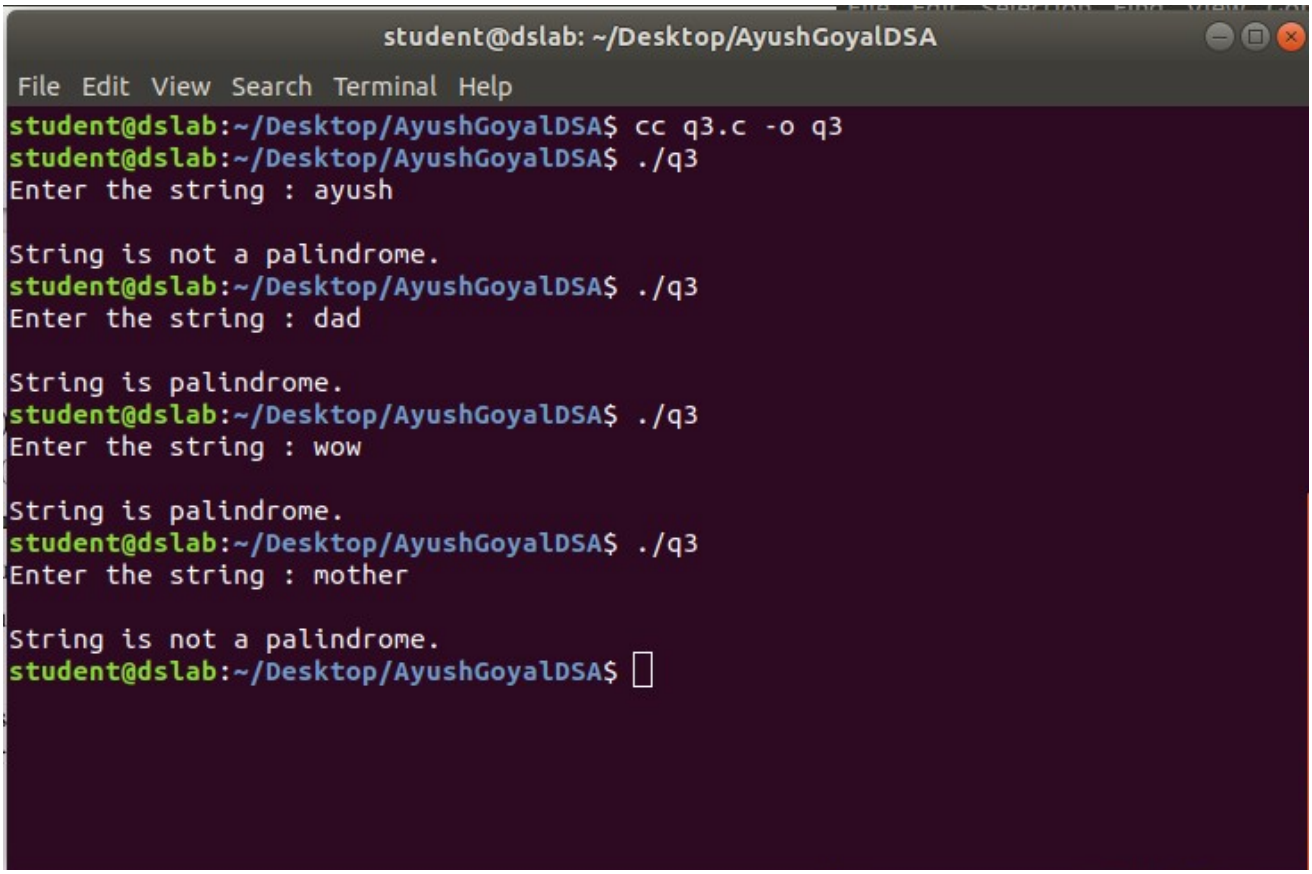
```
        printf("Enter the string : ");
        scanf("%[^\n]s",str1);
        printf("\nCopying string1 to string2...\n");
        copy(str1,str2,0);
        printf("\nString1 : %s\n",str1);
        printf("String2 : %s\n",str2);
        return 0;
}
```



Q3)

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

int palindromecheck(char str[], int i, int j)
{
        if(j>i){
                if(str[i] == str[j]){
                        return palindromecheck(str,i+1,j-1);
                }
                else
                        return 0;
        }
        return 1;
}
```

```
int main()
{
	char str[100];
	printf("Enter the string : ");
	scanf("%[^\n]s",str);
	int l = strlen(str);
	int c = palindromecheck(str,0,l-1);
	if(c == 1)
		printf("\nString is palindrome.\n");
	else
		printf("\nString is not a palindrome.\n");
	return 0;
}
```



Q4)

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

int tower(int n, char s, char d, char t)
{
	static int count = 0;
	count++;
	if(n==1)
		return count;
	tower(n-1,s,d,t);
```

```
        tower(n-1,t,s,d);
}

int main()
{
        int n,m;
        printf("Enter the number of disks for ToH : ");
        scanf("%d",&n);
        char s = 'a',d = 'b',t = 'c';
        m = tower(n,s,d,t);
        printf("\nNumber of moves required are : %d\n",m);
        return 0;
}
```