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Course Slot: L1+L2

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DIGITAL ASSIGNMENT 1

1. **Reverse a given string using string function and also without string function.**

a. Using string reverse function.

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

int main(){
    char str[40];
    printf("enter the string: ");
    scanf("%s",&str);
    printf("revresed string: ");
    printf(strrev(str));   //using string function
    return 0;
}
```

Output:

```
enter the string: shreya
revresed string: ayerhs
PS D:\pdf\sem 4\DSA\codes>
```

---

b. Without string.h functions.

```c
#include <stdio.h>
int main()
{
    char s[1000], r[1000];
    int begin, end, count = 0;
    printf("Input a string\n");
    gets(s);
    while (s[count] != '\0')
        count++;
    end = count - 1;
    for (begin = 0; begin < count; begin++)
    {
        r[begin] = s[end];
        end--;
    }
    r[begin] = '\0';
    printf("%s\n", r);
    return 0;
}
```

Output:

```
Input a string
shreya
ayerhs
PS D:\pdf\sem 4\DSA\codes>
```

---

2. Arrange a given set of book names in ascending and descending order.

```c
#include <stdio.h>
#include <string.h>
void books(int n, char str[100][100], char temp[100])
{
    printf("enter number of books in library: ");
    scanf("%d", &n);
    printf("\nenter the books names: ");
    for (int i = 1; i <= n; i++)
    {
        scanf("%s", str[i]);
    }
    for (int i = 1; i <= n; i++)
    {
        for (int j = i + 1; j <= n; j++)
        {
            if (strcmp(str[i], str[j]) > 0)
            {
                strcpy(temp, str[i]);
                strcpy(str[i], str[j]);
                strcpy(str[j], temp);
            }
        }
    }
    printf("\nThe ascending order of names are:\n");
    for (int i = 1; i <= n; i++)
    {
        printf("%s\n", str[i]);
    }
    for (int i = 1; i <= n; i++)
    {
        for (int j = i + 1; j <= n; j++)
        {
            if (strcmp(str[i], str[j]) < 0)
            {
                strcpy(temp, str[i]);
                strcpy(str[i], str[j]);
```

```
                strcpy(str[j], temp);
            }
        }
    }
    printf("\nThe descending order of names are:\n");
    for (int i = 1; i <= n; i++)
    {
        printf("%s\n", str[i]);
    }
}

int main()
{
    int n;
    char str[100][100];
    char temp[100];
    books(n, str, temp);
}
```

Output:

```
BooknamesAscending.cpp -o arrangeBooknamesAscendin
namesAscending }
enter number of books in library: 5

enter the books names: Pinky
Lucky
Ram
Appu
Bob

The ascending order of names are:
Appu
Bob
Lucky
Pinky
Ram

The descending order of names are:
Ram
Pinky
Lucky
Bob
Appu
```

3. **Search for a given name in an array of student names by creating a search function of your own.**

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

void search(int n, char name[100], char data[100][100])
{
    int i,c;
    printf("\nenter number of students : ");
    scanf("%d", &n);
    printf("\nEnter the names:");
    for (i = 0; i < n; i++)
    {
        scanf("%s",data[i]);
    }
    printf("\nEnter name to search : ");
    scanf("%s", name);
    for (i = 0; i < n; i++)
    {
        if (strcmp(data[i], name) == 0)
        {
            c=1;
            break;
        }
    }
    if (c = 1)
    {
        printf("\n Found at position %d ", i+1);
    }else{
        printf("Not present");
    }
}

int main()
{
    int n;
    char student[100], dataset[100][100];
    search(n, student, dataset);
}
```

Output:

```
enter number of students : 5

Enter the names:Shreya
Jack
Jill
Jhonny
Sam

Enter name to search : Sam

 Found at position 5
```

---

4. Find the largest and smallest of given names based on the length.

```c
#include<stdio.h>
#include<string.h>
void index(int n,char data[100][100]){
    int length=0,k,min,max,j;
    printf("\nEnter number of names : ");
    scanf("%d",&n);
    for(int i=0;i<n;i++){
        printf("Enter name - %d : ",i+1);
        scanf("%s",data[i]);
    }
    min=max=strlen(data[0]);
    for(int i=1;i<n;i++){
        length=strlen(data[i]);
        if(length>max){
            max=length;
            k=i;
        }else if(length<min){
            min=length;
            j=i;
        }
    }

    printf("The largest name is %s\n",data[k]);
    printf("The smallest name is %s",data[j]);
}

int main(){
    int n;char data[100][100];
    index(n,data);
}
```

Output:

```
Enter number of names : 4
Enter name - 1 : ram
Enter name - 2 : jack
Enter name - 3 : jhonny
Enter name - 4 : eu
The largest name is jhonny
The smallest name is eu
```

---

5. Create student records for 10 students with name, age, address and phone number and search for the student whose name has the maximum number of characters.

```c
#include <stdio.h>
#include<string.h>
struct Student
{
    char name[50];
    int age;
    char address[100];
    int phone;
};


int main()
{
    int n,max;
    int i = 1;
    printf("Enter number of students:");
    scanf("%d", &n);
    struct Student arr[n];

    while (i <= n)
    {
        printf("Enter information of student %d:",i);
        printf("Name :");
        scanf("%s", &arr[i].name);
        printf("Age :");
        scanf("%d", &arr[i].age);
        printf("Address :");
        scanf("%s", &arr[i].address);
        printf("Phone Number :");
        scanf("%d", &arr[i].phone);
```

```
        i++;
    }
    for (i = 1; i <= n; i++)
    {
        printf(" Name : %s \n Address : %s\n Phone Number : %d \n\n", arr[i].name,
arr[i].address, arr[i].phone);
        if(strlen(arr[i+1].name)>=strlen(arr[i].name)){
          max=i+1;
        }else{
            max=max;
        }
    }
    printf("the largest word is : %s",arr[max].name);
}
```

Output:

```
Enter number of students:10
Enter information of student 1:Name :Sam
Age :12
Address :ABC
Phone Number :123
Enter information of student 2:Name :bill
Age :11
Address :AAA
Phone Number :444
Enter information of student 3:Name :Helly
Age :22
Address :ggg
Phone Number :555
Enter information of student 4:Name :Shreyaa
Age :44
Address :XYZ
Phone Number :788
Enter information of student 5:Name :Nikitha
Age :18
Address :chennai
Phone Number :666
Enter information of student 6:Name :Adhina
Age :19
Address :Pune
Phone Number :4444
Enter information of student 7:Name :Shantanu
Age :21
```

```
 Age :21
 Address :Kolkata
 Phone Number :333
 Enter information of student 8:Name :Goutham
 Age :20
 Address :Kerala
 Phone Number :777
 Enter information of student 9:Name :Pakhi
 Age :21
 Address :UP
 Phone Number :3333
 Enter information of student 10:Name :Om
 Age :17
 Address :Kunra
 Phone Number :8888
  Name : Sam
  Address : ABC
  Phone Number : 123

  Name : bill
  Address : AAA
  Phone Number : 444

  Name : Helly
  Address : ggg
  Phone Number : 555

  Name : Shreyaa
  Address : XYZ
```

```
 Name : Nikitha
 Address : chennai
 Phone Number : 666

 Name : Adhina
 Address : Pune
 Phone Number : 4444

 Name : Shantanu
 Address : Kolkata
 Phone Number : 333

 Name : Goutham
 Address : Kerala
 Phone Number : 777

 Name : Pakhi
 Address : UP
 Phone Number : 3333

 Name : Om
 Address : Kunra
 Phone Number : 8888

the largest word is : Shantanu
PS D:\pdf\sem 4\DSA\codes>
```

6. Create a mail account by taking the username, password, confirm password, secret_question, secret_answer and phone number. Allow users to register, login and reset password (based on secret question). Display the user accounts and their details.

```c
#include <stdio.h>
#include <string.h>
#include <process.h>
#include <stdlib.h>
struct mail
{
    char usrnm[50];
    char pass[50];
    char cpass[50];
    char sq[100];
    char asq[30];
    char phn[10];
} s[100];
main()
{
    int n, i, choice, t = 0;
    char r[50], p[50], a[30];
    while (1)
    {
        printf("Menu:\n");
        printf("1-Regiter\n");
        printf("2-Login\n");
        printf("3-Reset password\n");
        printf("4-Exit\n");
        printf("Enter your choice: \n");
        scanf("%d", &choice);
        switch (choice)
        {
        case 1:
            printf("Enter the number of user accounts to be registered: \n");
            scanf("%d", &n);
            for (i = t; i < n + t; i++)
            {
                printf("Enter the following details for: \n");
                printf("Username: ");
                scanf("%s", s[i].usrnm);
                printf("Password: ");
                scanf("%s", s[i].pass);
                printf("Confirm Password: ");
                scanf("%s", s[i].cpass);
                printf("Secret Question: ");
                scanf("%s", s[i].sq);
                printf("Secret Answer: ");
                scanf("%s", s[i].asq);
                printf("Phone Number: ");
                scanf("%s", s[i].phn);
            }
            t = t + n;
            break;
```

```
        case 2:
            printf("Enter the username: ");
            scanf("%s", &r);
            for (i = 0; i < t; i++)
            {
                if (strcmp(s[i].usrnm, r) == 0)
                {
                    printf("Enter the password: ");
                    scanf("%s", &p);
                    if (strcmp(s[i].pass, p) == 0)
                    {
                        printf("You the logged into your account.\n");
                    }
                }
            }
            break;
        case 3:
            printf("Enter the username: ");
            scanf("%s", &r);
            for (i = 0; i < t; i++)
            {
                if (strcmp(s[i].usrnm, r) == 0)
                {
                    printf("Enter current password: ");
                    scanf("%s", &p);
                    if (strcmp(s[i].pass, p) == 0)
                    {
                        printf("%s\n", s[i].sq);
                        printf("Enter the secret answer: ");
                        scanf("%s", &a);
                        if (strcmp(s[i].asq, a) == 0)
                        {
                            printf("Enter the new password: ");
                            scanf("%s", s[i].pass);
                        }
                    }
                }
            }
            break;
        case 4:
            exit(0);
            break;
        }
    }
}
```

Output:

```
Menu:
1-Regiter
2-Login
3-Reset password
4-Exit
Enter your choice:
1
Enter the number of user accounts to be registered:
1
Enter the following details for:
Username: Shreya
Password: 1234
Confirm Password: 1234
Secret Question: Pet name
Secret Answer: Phone Number: Chikki
Menu:
1-Regiter
2-Login
3-Reset password
4-Exit
Enter your choice:
2
Enter the username: Shreya
Enter the password: 1234
You the logged into your account.
```

```
Menu:
1-Regiter
2-Login
3-Reset password
4-Exit
Enter your choice:
3
Enter the username: Shreya
Enter current password: 1234
Pet
Enter the secret answer: Chikki
Menu:
1-Regiter
2-Login
3-Reset password
4-Exit
Enter your choice:
4
PS D:\pdf\sem 4\DSA\codes>
```

7. Create employee record by taking details like name, employee id, address and phone number. While taking the phone number, take either landline or mobile number. Ensure that the phone numbers of the employee are unique. Also display all the details.

```c
#include <stdio.h>
#include <strings.h>
struct emp
{
    char name[30];
    char empid[30];
    char address[50];
    char ph[20];
} e[10];
int main()
{
    int i, n, j;
    printf("Enter number of workers: \n");
    scanf("%d", &n);
    printf("Enter name, emp id, address and phone number.\n");
    for (i = 0; i < n; i++)
    {
        scanf("%s %s %s %s", e[i].name, e[i].empid, e[i].address, e[i].ph);
        for (j = 0; j < i; j++)
        {
            if (strcmp(e[i].ph, e[j].ph) == 0)
            {
                printf("Existing phone number.\n");
                i--;
                n--;
                break;
            }
        }
    }
    for (i = 0; i < n; i++)
        printf("%s %s %s %s\n", e[i].name, e[i].empid, e[i].address, e[i].ph);
    return 0;
}
```

Output:

```
Enter number of workers:
3
Enter name, emp id, address and phone number.
sam
1
abc
112
jack
2
xyz
134
ram
3
efg
555
sam 1 abc 112
jack 2 xyz 134
ram 3 efg 555
PS D:\pdf\sem 4\DSA\codes>
```

---

8. Take the input details on rainfall of 5 months in 2D arrays and calculate the average rainfall of each month using functions.

```c
#include <stdio.h>
void avg(int m[], int k)
{
    int i;
    float average;
    int s = 0;
    for (i = 0; i < 5; i++)
    {
        s = s + m[i];
    }
    average = (float)(s / 5);
    printf("average rainfall for %d month is %f", k + 1, average);
}
int main()
{
    int a[5][30], i, j, c = 0;
    printf("enter the records of rainfall");
    for (i = 0; i < 5; i++)
    {
        printf("\nenter the details of month %d :", i + 1);
        for (j = 0; j < 5; j++)
        {
            scanf("%d", &a[i][j]);
```

```
        }
        avg(a[i], i);
        printf("\n");
    }
}
```

Output:

```
enter the records of rainfall
enter the details of month 1 :1
2
3
4
5
average rainfall for 1 month is 3.000000

enter the details of month 2 :6
7
8
9
11
average rainfall for 2 month is 8.000000

enter the details of month 3 :12
12
11
1
2
average rainfall for 3 month is 7.000000

enter the details of month 4 :4
5
6
7
8
average rainfall for 4 month is 6.000000

enter the details of month 5 :8
9
2
3
4
average rainfall for 5 month is 5.000000
PS D:\pdf\sem 4\DSA\codes>
```

9. Create a registration form application by taking the details like username, address, phone number, email with password and confirm password (should be same as password). Ensure that the password is of 8 characters with only numbers and alphabets. Take such details for 3 users and display the details. While taking input password must appear as "**"**

```c
#include <stdio.h>
#include <string.h>
#include <math.h>
#include <conio.h>
#include <cctype>
struct employee
{
    char user[50], add[50], email[50], pass[50], cpass[50];
    int phone[10];
};
int main()
{
    char x[50], a[10], b[10];
    int i, j;
    struct employee e[3];
    for (i = 0; i < 3; i++)
    {
        printf("Enter the username: ");
        scanf("%s", &x);
        for (j = 0; j < strlen(x); j++)
        {
            if (isalpha(x) == 0 || isdigit(x) == 0)
                continue;
            else
                printf("Invalid");
            exit(0);
        }
        strcpy(e[i].user, x);
        printf("Enter the address: ");
        scanf("%s", &e[i].add);
        printf("Enter the email: ");
        scanf("%s", &e[i].email);
        printf("Enter the password: ");
        for (j = 0; j < 8; j++)
        {
            if (j == 0)
            {
                a[1] = getch();
                printf("*");
            }
            else
            {
                strcat(a, b);
            }
            strcpy(b, a);
```

```
        }
        strcpy(e[i].pass, a);
        printf("Enter the confirm password: ");
        for (j = 0; j < 8; j++)
        {
            if (j == 0)
            {
                a = getch();
                printf("*");
            }
            else
            {
                strcat(a, b);
            }
            b = a;
        }
        strcpy(e[i].cpass, a);
        printf("%s", &e[i].user);
        printf("%s", &e[i].add);
        printf("%s", &e[i].email);
        if (strcmp(e[i].pass, e[i].cpass) == 0)
            printf("%s", a);
    }
}
```

Output: