

Q1

```
#include<stdio.h>
#include <string.h>
#include<time.h>
#include<stdlib.h>
main()
{
    printf("Syeda Fakhira Saghir\t22k-4413\n\n");
    for(;;)
    {
        int x,i,j,k,l,count=0,score=0;
        char a[26], t[5][6], S[50];
        for(k='A';k<='Z';k++)
        {
            a[l]=k;
            l++;
        }
        srand(time(0));
        for(i=0;i<5;i++)
        {
            for(j=0;j<6;j++)
            {
                if((i==4 && j==0) || (i==4 && j==1))
                {
                    t[i][j]=4;
                    printf("4\t");
                }
                else if((i==4 && j==2))
                {
                    t[i][j]=1;
                    printf("1\t");
                }
                else if((i==4 && j==3))
                {
                    t[i][j]=3;
                    printf("3\t");
                }
                else
                {
                    x=rand()%26;
                    t[i][j]=a[x];
                    printf("%c\t", t[i][j]);
                }
            }
            printf("\n");
        }
        //table generated
    }
    for(;;)
    {
```

//if count of number of words in sequence equals the string length in rows score++ then
increment in the score else check column wise

```
    printf("word :\\t");
    scanf("%s", S);
    strcpy(S,strupr(S));
    if((S[0]=='E' && S[1]=='N' && S[2]=='D'))
    {
        break;
    }
    else
    {
        for(i=0; i<6; i++)
        {
            count=0;
            k=0;
            for(j=0; j<5; j++)
            {
                if(t[i][j]==S[k])
                {
                    count++;
                    k++;
                    if(k==(strlen(S)))
                    {break;}
                }
            }
            else
            {
                count=0;
                k=0;
            }
        }
        if(k==(strlen(S)))
        {break;}
    }
}
if(count==(strlen(S)))
{
    score++;
    printf("%s is present ---> Score %d\\n\\n",S,score);
}
else
{
    for(i=0; i<6; i++)
    {
        count=0;
        k=0;
        for(j=0; j<5; j++)
        {
            if(t[j][i]==S[k])
            {
```

```

        count++;
        k++;
        if(k==(strlen(S)))
            {break;}
    }
    else
    {
        count=0;
        k=0;
    }
}
if(k==(strlen(S)))
    {break;}
}

if(count==(strlen(S)))
{score++;
printf("%s is present ---> Score %d\n\n",S,score);}
else
{
    score--;
    printf("%s is not present ---> Score%d\n\n",S,score);}
}
}
//score 0 everytime a new table is generated
score=0;
continue;
}
}

```

```

C:\Users\std_1\OneDrive - ITe...
Syeda Fakhira Saghir 22k-4413

B   I   Q   T   U   P
R   I   O   L   N   Q
D   E   A   K   E   G
H   A   A   F   H   V
4   4   1   3   Q   C

word : BIQ
BIQ is present ---> Score 1

word : TLK
TLK is present ---> Score 2

word : eak
EAK is present ---> Score 3

word : hhh
HHH is not present ---> Score2

word : end

New Table
O   F   X   J   F   O
G   W   R   C   B   M
A   B   X   H   M   D
L   I   A   W   K   L
4   4   1   3   X   S

word : ofx
OFX is present ---> Score 1

word : fwb
FWB is present ---> Score 2

word : lmp
LMP is not present ---> Score1

word : iaw
IAW is present ---> Score 2

word : vvv

```

Q2

```
#include<stdio.h>
#include<string.h>
main()
{
    printf("Syeda Fakhira Saghir\t22k-4413\n\n");
    char sen[30], t[30], nsen[30][30], a='a', y='y', temp, word[30], c=0;
    int i,j=0,k=0,x;
    printf("enter a sentence : ");
    scanf("%s", sen);
    for(i=0;sen[i]!='\0';i++)
    {
        if(sen[i]==' ' && sen[i+1]!='\0')
            c++;
    }
    //number of words
    for(i=0;i<=(strlen(sen));i++)
    {
        if(sen[i]==' ' || sen[i]=='\0')
        {
            nsen[k][j]='\0';
            k++;
            j=0;
        }
        else
        {
            nsen[k][j]=sen[i];
            j++;
        }
    }
    while(i!=(sizeof(nsen)/sizeof(nsen[0])))
    {
        //i = increment to words
        //sch
        x=strlen(nsen[i]);
        if(nsen[i][0]=='s' || nsen[i][0]=='S' || nsen[i][2]=='c' || nsen[i][3]=='h')
        {
            for(j=0;j<(strlen(nsen[i]));j++)
            {
            }
            strcat(nsen[i], a);
            strcat(nsen[i], y);
            i++;
        }
        else if (nsen[i][0]=='a'
        || nsen[i][0]=='e' || nsen[i][0]=='i' || nsen[i][0]=='o' || nsen[i][0]=='u' || nsen[i][0]=='A'
        || nsen[i][0]=='E' || nsen[i][0]=='I' || nsen[i][0]=='O' || nsen[i][0]=='U')
        {

```

```

        for(j=0;j;j++)
        {

        }
        strcat(nsen[i], a);
        strcat(nsen[i], y);
        i++;
    }
    //y
    else if(nsen[i][0]=='Y' | | nsen[i][0]=='y')
    {
        for(j=0; j<=3; j++)
        {
            strcpy(t[j],nsen[0]);
            for(j=0; j<=(strlen(nsen[i])); j++)
            {
                strcpy(t[j],nsen[j+1]);
            }
            strcpy(nsen[j],t[j]);
        }
        //add ay
        strcat(nsen[i], a);
        strcat(nsen[i], y);
        strcat(nsen[i], a);
        strcat(nsen[i], y);
        i++;
    }
}

//capital letters
else if((nsen[i][0])>=95 && (nsen[i][0])<=122)
{
    ///make every letter small
    strcpy(nsen,strupr(nsen));
    //rotate
    for(j=0; j<=3; j++)
    {
        strcpy(t[j],nsen[0]);
        for(j=0; j<=(strlen(nsen[i])); j++)
        {
            strcpy(t[j],nsen[j+1]);
        }
        strcpy(nsen[j],t[j]);
    }

    //add ay
    strcat(nsen[i], a);
    strcat(nsen[i], y);
    //capitalize the first letter
    i++;
}

```

```

    }
    /*rotation
    else
    {
    for(j=0; j<=3; j++)
    {
        strcpy(t[j],nsen[0]);
        for(j=0; j<=(strlen(nsen[i])); j++)
        {
            strcpy(t[j],nsen[j+1]);
        }
        strcpy(nsen[j],t[j]);
    }
    strcat(nsen[i], a);
    strcat(nsen[i], y);
    i++;
    }
    }
}

```

Q3

```
#include<stdio.h>
#include<string.h>
char id[413][20],name[413][20];
int i=0;
double mid1[413],mid2[413],final[413],assignment[413],quiz[413],score[413];
int accumulateEvaluations()
{
    char search[20];
    int score1;
    printf("enter student id or student name\n");
    scanf("%s", search);
    for(i=0;i<413;i++)
    {
        if(((strcmp(search,name[i]))==0) || ((strcmp(search,id[i]))==0))
        {score1= mid1[i]+mid2[i]+final[i]+ quiz[i]+ assignment[i];
        return score1;}
    }
}
int getGPA()
{
    float x,y;
    x=accumulateEvaluations();
    y=(x/100)*2;
    printf("GPA = %.2f", y);
}
int smartFind()
{
    printf("Syeda Fakhira Saghir\t22k-4413\t Get GPA\n");
    int i,j,k=0;
    char search[20];
    printf("enter student id or student name");
    scanf("%s", search);
    for(i=0,k=0;i<3;i++,k++)
    {
        if(((strcmp(search,name[i]))==0) || ((strcmp(search,id[i]))==0))
    if(k==413)
    {
        printf("id: %s\n", id[i]);
        printf("name: %s\nmid 1: %.2f\nmid 2: %.2f\nfinal score: %.2f\nassignment score: %.2f\n",
name[i],mid1[i],mid2[i],final[i],assignment[i]);
        printf("quiz score: %.2f\ntotal score: %.2f\n", quiz[i], score[i]);
    }
}
}

int main()
{
```

```

printf("Syeda Fakhira Saghir\t22k-4413\n\n");
int j,i;
float mid1score,mid2score,finalscore,totalscore,high=0,v=1;
char action,idg[10],highid[20];
for(i=0;i<413;i++)
{
    printf("\nID : ");
    scanf("%s", id[i]);
    for(j=0;j<i;j++)
    {
        if(id[i]==id[j])
        {
            printf("Student ID exists, please enter data for another student\n");
            break;
        }
    }
    printf("name : ");
    scanf("%s", name[i]);
    printf("mid 1 score out of 15 : ");
    scanf("%lf", &mid1[i]);
    printf("mid 2 out of 15 : ");
    scanf("%lf", &mid2[i]);
    printf("final score out of 50 : ");
    scanf("%lf", &final[i]);
    printf("assignment score out of 10 : ");
    scanf("%lf", &assignment[i]);
    printf("quiz score out of 10 : ");
    scanf("%lf", &quiz[i]);
    score[i]=mid1[i]+mid2[i]+final[i]+assignment[i]+quiz[i];
    mid1score=mid1score+mid1[i];
    mid2score=mid2score+mid2[i];
    finalscore=finalscore+final[i];
    totalscore=totalscore+score[i];
    if(score[i]>high)
    {
        high=score[i];
        strcpy(highid,id[i]);
    }
}
while(v!=0)
{
    printf("\nEnter appropriate letter for your choice of action. a,g,r,f,s or e to exit : ");
    fflush(stdin);
    scanf("%c", &action);
    switch(action)
    {
        case 'a':
            {
                printf("\nEnter id : ");

```



```

scanf("%s", idg);
printf("\nSyeda Fakhira Saghir\t22k-4413\t Function: Get GPA\n");
for(i=0;i<413;i++){
    if((strcmp(idg,id[i]))==0)
    {
        printf("%s", id[i]);
        printf("%s", name[i]);
        getGPA();
    }
}
break;
}
case 'g':
{
    printf("\nID \t GPA\t NAME\n");
    for(i=0;i<413;i++){
        printf("%s\t%s\n", id[i], name[i]);
        printf("GPA : %.2lf\n", ((score[i])/100)*2);
        printf("%s\n",name[i]);
    }
    break;
}
case 'r':
{
    strcpy(name[7],"Fakhira");
    strcpy(id[7],"22k-22");
    mid1[7]=9;
    mid2[7]=12;
    final[7]=50;
    quiz[7]=2.8;
    assignment[7]=7;
    printf("\nData replaced\n");
    break;
}
case 'f':
{
    printf("\nSyeda Fakhira Saghir\t22k-4413\t Smart Find\n");
    smartFind();
    break;
}
case 's':
{
    printf("\nTotal student count is : %d\n", 413);
    printf("Average score Mid1 is : %.2f\n", (mid2score/413));
    printf("Average score Mid2 is : %.2f\n", (mid2score/413));
    printf("Average score final is : %.2f\n", (finalscore/413));
    printf("Average total score is : %.2f\n", (totalscore/413));
    printf("Student ID : %s", highid);
    printf("has the maximum score of %.2f\n", high);
}

```

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        break;
    }
    case 'e':
    {
        v=0;
        break;
    }
}
}
}

```

```

C:\Users\std_1\OneDrive - ITe...
Syeda Fakhira Saghir 22k-4413

ID : 22k-4413
name : Fakhira
mid 1 score out of 15 : 9.75
mid 2 out of 15 : 12
final score out of 50 : 45
assignment score out of 10 : 9
quiz score out of 10 : 7

ID : 22k-4456
name : Zahid
mid 1 score out of 15 : 14
mid 2 out of 15 : 7.7
final score out of 50 : 43
assignment score out of 10 : 3
quiz score out of 10 : 1

ID : 22k-5656
name : Khadija
mid 1 score out of 15 : 12
mid 2 out of 15 : 13.5
final score out of 50 : 48.8
assignment score out of 10 : 10
quiz score out of 10 : 10

Enter appropriate letter for your choice of action. a,g,r,f,s or e to exit : a

enter id : 22k-4413

Syeda Fakhira Saghir 22k-4413 Function: Get GPA
22k-4413Fakhiraenter student id or student name
22k-4456
GPA = 1.36
Enter appropriate letter for your choice of action. a,g,r,f,s or e to exit : g

ID      GPA      NAME
22k-4413 1.66      Fakhira
GPA : 1.66

```

```
C:\Users\std_0\OneDrive - fte x + v
22k-4413Fakhiraenter student id or student name
22k-4456
GPA = 1.36
Enter appropriate letter for your choice of action. a,g,r,f,s or e to exit : g

ID      GPA      NAME
22k-4413    Fakhira
GPA : 1.66
Fakhira
22k-4456    Zahid
GPA : 1.37
Zahid
22k-5656    Khadija
GPA : 1.89
Khadija

Enter appropriate letter for your choice of action. a,g,r,f,s or e to exit : r
Data replaced

Enter appropriate letter for your choice of action. a,g,r,f,s or e to exit : f
Syeda Fakhira Saghir    22k-4413    Smart Find
Syeda Fakhira Saghir    22k-4413    Get GPA
enter student id or student name22k-4413

Enter appropriate letter for your choice of action. a,g,r,f,s or e to exit : s
Total student count is : 3
Average score Mid1 is : 11.07
Average score Mid2 is : 11.07
Average score final is : 45.60
Average total score is : 81.92
Student ID : 22k-5656has the maximum score of 94.30

Enter appropriate letter for your choice of action. a,g,r,f,s or e to exit : e
-----
Process exited after 109.8 seconds with return value 0
Press any key to continue . . . |
```

21°C Clear 10:43 PM 11/27/2022