

**NATIONAL UNIVERSITY OF COMPUTER & EMERGING  
SCIENCES PESHAWAR CAMPUS**



**Programming fundamentals**

**Assignment 03**

**Submitted BY**

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**Submitted to**

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## Problem 1

```
//This program is written by "Hassan Sardar" roll no."22p-9108".  
// This program will show the union of two arrays.
```

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

```
int main()
```

```
{
```

```
int arr1[20], arr2[20], uni[40];
```

```
int i, j, k, n, m;
```

```
printf("Enter size of first array:");
```

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

```
printf("Enter elements of first array :\n");
```

```
for(i=0;i<n;++i)
```

```
{
```

```
    scanf("%d",&arr1[i]);
```

```
}
```

```
printf("\nEnter size of second array:");
```

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

```
printf("Enter elements of second array :\n");
```

```
for(i=0;i<m;++i)
```

```
{
```

```
    scanf("%d",&arr2[i]);
```

```
}
```

```
for(i=0,j=0,k=0;i<n&& j<m;)
```

```
{
```

```
    if(arr1[i]<arr2[j])
```

```
    {
```

```
        uni[k]=arr1[i];
```

```
        i++;
```

```
        k++;
```

```
    }
```

```
else if(arr1[i]>arr2[j])
```

```
{
```

```
    uni[k]=arr2[j];
```

```
    j++;
```

```
    k++;
```

```
}
```

```

else
{
    uni[k]=arr1[i];
    i++;
    j++;
    k++;
}
}
if(i<n)
{
    for(;i<n;++i)
    {
        uni[k]=arr1[i];
        k++;
    }
}
else if(j<m)
{
    for(;j<m;++j)
    {
        uni[k]=arr2[j];
        k++;
    }
}
printf("\nUnion of two arrays is:\n");
for(i=0;i<k;++i)
{
    printf("%d ",uni[i]);
}

return 0;
}

```

## output

```

hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx: ~/Desktop/pf...
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf assign3$ gcc prb1.c -o p
rb1.out
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf assign3$ ./prb1.out
Enter size of first array:3
Enter elements of first array :
1
2
3

Enter size of second array:4
Enter elements of second array :
1
2
3
4

Union of two arrays is:
1 2 3 4 hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf assign3$ 

```

## Problem 2

//This program is written by "Hassan Sardar" roll no."22p-9108".  
// This program will show us multiplication of two matrices.

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
    int a,b,c,d,sum = 0;
    int a1[10][10], a2[10][10], result[10][10];

    printf("Enter the size of first matrix:\n");
    scanf("%d",&a);
    scanf("%d",&b);

    printf("Enter the size of second matrix:\n");
    scanf("%d",&c);
    scanf("%d",&d);

    if(b!=c)
    {
        printf("Multiplication not possible");
        return 0;
    }

    printf("Enter the first matrix\n");
    for (int i = 0; i < a; i++)
    {
        for (int j = 0; j < b; j++)
        {

            scanf("%d", &a1[i][j]);

        }

    }

    printf("Enter the second matrix\n");
```

```

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

        scanf("%d", &a2[i][j]);

    }

}

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

        for (int k = 0; k < c; k++)
        {
            sum=sum +a1[i][k] * a2[k][j];
        }
        result[i][j] = sum;
        sum = 0;
    }
}

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

        printf("%d \t", result[i][j]);
    }
    printf("\n");
}

return 0;
}

```

## output

```
Activities Terminal
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf assign3$ ./prb2.out
Enter the size of first matrix:
4
3
Enter the size of second matrix:
3
4
Enter the first matrix
1
2
3
4
5
6
7
8
9
0
0
9
Enter the second matrix
1
2
3
4
5
6
7
8
9
0
9
8
38      14      44      44
83      38      101     104
128     62      158     164
81       0       81      72
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf assign3$ ./prb2.out
Enter the size of first matrix:
3
4
Enter the size of second matrix:
3
4
Multiplication not possiblehassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf assign3$
```

### **problem 3**

```
//This program is written by "Hassan Sardar" roll no."22p-9108".  
// This program will calculate the GPA.
```

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

```

int main()
{
int n;
char grade[25];
int credit_sum=0;
int hours;
float pro=1, grade_sum=0, GPA=0;

printf("Enter the total number of subjects:");
scanf("%d",&n);

for(int i=0;i<n;i++)
{
printf("Please enter your grade in subject %d:",i+1);
scanf("\n%s",grade);

printf("Please enter the credit hours of subject %d:",i+1);
scanf("\n%d",&hours);
credit_sum=credit_sum+hours;

if((strcmp(grade,"a"))||(strcmp(grade,"A")))
{
pro=4.0*hours;
}

else if((strcmp(grade,"a-"))||(strcmp(grade,"A-")))
{
pro=3.67*hours;
}
else if((strcmp(grade,"b+"))||(strcmp(grade,"B+")))
{
pro=3.33*hours;
}
else if((strcmp(grade,"b"))||(strcmp(grade,"B")))
{
pro=3.0*hours;
}
else if((strcmp(grade,"b-"))||(strcmp(grade,"B-")))
{
pro=2.67*hours;
}
else if((strcmp(grade,"c+"))||(strcmp(grade,"C+")))
{
pro=2.33*hours;
}
}

```



```

    }
    else if((strcmp(grade,"c"))||(strcmp(grade,"C")))
    {
        pro=2.0*hours;

    }
    else if((strcmp(grade,"c-"))||(strcmp(grade,"C-")))
    {
        pro=1.67*hours;
    }
    else if((strcmp(grade,"d+"))||(strcmp(grade,"D+")))
    {
        pro=1.33*hours;
    }
    else if((strcmp(grade,"d"))||(strcmp(grade,"D")))
    {
        pro=1.0*hours;
    }
    else if((strcmp(grade,"f"))||(strcmp(grade,"F")))
    {
        pro=pro*(0*hours);
    }

}

printf("pro:%f\n",pro);
printf("Credit sum:%d\n",credit_sum);

grade_sum=grade_sum+pro;
GPA=grade_sum/credit_sum;

printf("Your GPA is:%0.2f\n",GPA);

return 0;
}

```

## output

```
Activities Terminal
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf assign3$ gcc prb3.c -o prb3.out
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf assign3$ ./prb3.out
Enter the total number of subjects:3
Please enter your grade in subject 1:a
Please enter the credit hours of subject 1:3
Please enter your grade in subject 2:a-
Please enter the credit hours of subject 2:1
Please enter your grade in subject 3:f
Please enter the credit hours of subject 3:3
pro:12.000000
Credit sum:7
Your GPA is:1.71
```

## problem 4

```
//This program is written by "Hassan Sardar" roll no."22p-9108".
// This program will show the restaurent menu and total bill.
```

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

```
int main()
{
char i, size,flav,cont;
int bill=0, qua;
float total=0;
```

```
while(1)
{
```

```
printf("Please choose the item from the list:\n(A) Espresso\n(B) Over Ice\n(C) Choclate Chillers\n(D) Fusion\n");
scanf("%c",&i);
```

```
if(i=='a' || i=='A')
{
printf("\nNice choice! Our Signature Chillers Are Loved Across 39 Countries Of the world\n please select the flavour\n");
```

```
printf("\n(A) Very vanilla Chiller\n(B) Cocoa locd\n(C) cookies in Cream\n(D) Hazelnut Mocha  
Chiller\n(E) Chocolate Macadamia Chiller\n(F) Italian Dolce Chiller\n(G) Caramel Nut Chiller\n(H)  
Tiramisu Chiller\n(I) Toffee Nut Chiller:\n" );  
scanf("\n%c",&flav);
```

```
if(flav=='a' || flav=='A')  
{  
    printf("\nNow Please select the size\n(A) Small:361\n(B) Regular:409\n");  
    scanf("\n%c",&size);  
  
    if(size=='A' || size=='a')  
    {  
        bill=bill+361;  
    }  
    else if(size=='b' || size=='B')  
    {  
        bill=bill+409;  
    }  
    printf("\nPlease enter the quantity:\n");  
    scanf("\n%d",&qua);  
    bill=bill*qua;  
}
```

```
else if(flav=='b' || flav=='B' || flav=='c' || flav=='C')  
{  
    printf("\nNow Please select the size\n(A) Small:361\n(B) Regular:409\n");  
    scanf("\n%c",&size);  
  
    if(size=='A' || size=='a')  
    {  
        bill=bill+361;  
    }  
    else if(size=='b' || size=='B')  
    {  
        bill=bill+409;  
    }  
    printf("\nPlease enter the quantity:\n");  
    scanf("\n%d",&qua);  
    bill=bill*qua;  
}
```

```
else if(flav=='d' || flav=='D' || flav=='e' || flav=='E' || flav=='f' || flav=='F' || flav=='g' || flav=='G')  
{  
    printf("\nNow Please select the size\n(A) Small:396\n(B) Regular:461\n");  
    scanf("\n%c",&size);  
  
    if(size=='A' || size=='a')  
    {
```

```

        bill=bill+396;
    }
    else if(size=='b'||size=='B')
    {
        bill=bill+461;
    }
    printf("\nPlease enter the quantity:\n");
    scanf("\n%d",&qua);
    bill=bill*qua;
}

else if(flav=='h'||flav=='H'||flav=='i'||flav=='I')
{
    printf("\nNow Please select the size\n(A) Small:399\n(B) Regular:509\n");
    scanf("\n%c",&size);

    if(size=='A'||size=='a')
    {
        bill=bill+399;
    }
    else if(size=='b'||size=='B')
    {
        bill=bill+509;
    }
    printf("\nPlease enter the quantity:\n");
    scanf("\n%d",&qua);
    bill=bill*qua;
}
printf("\nIf you want press any key if not enter N\n");
scanf("\n%c",&cont);
if(cont=='n'||cont=='N')
break;
}

else if(i=='b'||i=='B')
{
    printf("Iced Coffe, Lemonade & Iced Teas");
    printf("\nPlease select the Flavour:");
    printf("\n(A) Signature Iced Coffee\n(B) Iced Mocha\n(C) Iced Caramel latte\n(D) Iced
Americano\n(E) Blueberry Lemonade\n(F) Lychee Lemonade\n(G) Green Apple Lemonade\n(H)
Peach Lemonade\n(I) Apple Soda\n(J) Lime Soda\n(K) Iced Teaa(Peach/ Lemon/ Lychee:)\n ");
    scanf("\n%c",&flav);

    if(flav=='a'||flav=='A')
    {
        printf("Now Please select the size\n(A) Small:300\n(B) Regular:374\n");
        scanf("\n%c",&size);

        if(size=='A'||size=='a')

```

```

    {
        bill=bill+300;
    }
    else if(size=='b'||size=='B')
    {
        bill=bill+374;
    }
    printf("Please enter the quantity:");
    scanf("\n%d",&qua);
    bill=bill*qua;
}

```

```

else if(flav=='b'||flav=='B')
{
    printf("Now Please select the size\n(A) Small:300\n(B) Regular:361");
    scanf("\n%c",&size);

```

```

        if(size=='A'||size=='a')
        {
            bill=bill+300;
        }
        else if(size=='b'||size=='B')
        {
            bill=bill+361;
        }
        printf("Please enter the quantity:\n");
        scanf("\n%d",&qua);
        bill=bill*qua;
    }

```

```

else if(flav=='c'||flav=='C')
{
    printf("Now Please select the size\n(A) Small:378\n(B) Regular:430\n");
    scanf("\n%c",&size);

```

```

        if(size=='A'||size=='a')
        {
            bill=bill+378;
        }
        else if(size=='b'||size=='B')
        {
            bill=bill+430;
        }
        printf("Please enter the quantity:\n");
        scanf("\n%d",&qua);
        bill=bill*qua;
    }

```

```

else if(flav=='d'||flav=='D')
{

```

```

printf("Now Please select the size\n(A) Small:252\n(B) Regular:274\n");
scanf("\n%c",&size);

if(size=='A'||size=='a')
{
    bill=bill+252;
}
else if(size=='b'||size=='B')
{
    bill=bill+274;
}
printf("Please enter the quantity:");
scanf("\n%d",&qua);
bill=bill*qua;
}

else if(flav=='e'||flav=='E'||flav=='f'||flav=='F'||flav=='g'||flav=='G'||flav=='h'||flav=='H')
{
    printf("Now Please select the size\n(A) Small:250\n(B) Regular:291\n");
    scanf("\n%c",&size);

    if(size=='A'||size=='a')
    {
        bill=bill+250;
    }
    else if(size=='b'||size=='B')
    {
        bill=bill+291;
    }
    printf("Please enter the quantity:");
    scanf("\n%d",&qua);
    bill=bill*qua;
}

else if(flav=='i'||flav=='I')
{
    printf("Now Please select the size\n(A) Small:335\n(B) Regular:340\n");
    scanf("\n%c",&size);

    if(size=='A'||size=='a')
    {
        bill=bill+335;
    }
    else if(size=='b'||size=='B')
    {
        bill=bill+340;
    }
    printf("Please enter the quantity:");
    scanf("\n%d",&qua);
}

```

```

        bill=bill*qua;
    }

    else if(flav=='j' || flav=='J')
    {
        printf("Now Please select the size\n(A) Small:335\n(B) Regular:361\n");
        scanf("\n%c",&size);

        if(size=='A' || size=='a')
        {
            bill=bill+335;
        }
        else if(size=='b' || size=='B')
        {
            bill=bill+361;
        }
        printf("Please enter the quantity:");
        scanf("\n%d",&qua);
        bill=bill*qua;
    }

    else if(flav=='k' || flav=='K')
    {
        printf("Now Please select the size\n(A) Small:239\n(B) Regular:291\n");
        scanf("\n%c",&size);

        if(size=='A' || size=='a')
        {
            bill=bill+239;
        }
        else if(size=='b' || size=='B')
        {
            bill=bill+291;
        }
        printf("Please enter the quantity:");
        scanf("\n%d",&qua);
        bill=bill*qua;
    }
    printf("\nIf you want more press any key if not enter N\n");
    scanf("\n%c",&cont);
    if(cont=='n' || cont=='N')
    break;
}

else if(i=='c' || i=='C')
{
    printf("\nGet a taste of our premium chocolate\n");
    printf("Please select flavour:");

```

```
printf("\n(A) Original Iced Chocolate\n(B) White Iced Chocolate\n(C) Chocolate Delight:");
scanf("%c",&flav);
```

```
if(flav=='a' || flav=='A' || flav=='b' || flav=='B')
{
    printf("Now Please select the size\n(A) Small:348\n(B) Regular:365");
    scanf("\n%c",&size);

    if(size=='A' || size=='a')
    {
        bill=bill+348;
    }
    else if(size=='b' || size=='B')
    {
        bill=bill+365;
    }
    printf("Please enter the quantity:");
    scanf("\n%d",&qua);
    bill=bill*qua;
}
```

```
else if(flav=='c' || flav=='C')
{
    printf("Now Please select the size\n(A) Small:348\n(B) Regular:400");
    scanf("\n%c",&size);

    if(size=='A' || size=='a')
    {
        bill=bill+348;
    }
    else if(size=='b' || size=='B')
    {
        bill=bill+400;
    }
    printf("Please enter the quantity:");
    scanf("\n%d",&qua);
    bill=bill*qua;
}
```

```
printf("If you want more press any key if not enter N\n");
scanf("\n%c",&cont);
if(cont=='n' || cont=='N')
break;
}
```

```
else if(i=='d' || i=='D')
{
    printf("Mix Up Our Best For A Unique Experience");
    printf("Please Select flavour\n");
```



```
printf("(A) iced Lime\n(B) Apple Chiller\n(C) Chai Chiller\n(D) Green Tea Chiller:\n");
scanf("\n%c",&flav);
```

```
if(flav=='a' || flav=='A' || flav=='b' || flav=='B')
{
    printf("Now Please select the size\n(A) Small:335\n(B) Regular:365");
    scanf("\n%c",&size);

    if(size=='A' || size=='a')
    {
        bill=bill+335;
    }
    else if(size=='b' || size=='B')
    {
        bill=bill+365;
    }
    printf("Please enter the quantity:");
    scanf("\n%d",&qua);
    bill=bill*qua;
}
```

```
else if(flav=='C' || flav=='c' || flav=='d' || flav=='D')
{
    printf("Now Please select the size\n(A) Small:348\n(B) Regular:400");
    scanf("\n%c",&size);

    if(size=='A' || size=='a')
    {
        bill=bill+348;
    }
    else if(size=='b' || size=='B')
    {
        bill=bill+400;
    }
    printf("Please enter the quantity:");
    scanf("\n%d",&qua);
    bill=bill*qua;
}
```

```
printf("If you want more press any key if not enter N\n");
scanf("\n%2c",&cont);
if(cont=='n' || cont=='N')
break;
}
```

```
}
printf("\nYour Total bill is %d",bill);
total=(bill*2.5)+(400);
printf("\nYour bill after including (2.5percent)tax and (400) service charges is %0.3f\n",total);
```

```
return 0;  
}
```

**output**

```
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf assign3$ gcc prb_4.c -o prb_4.out
hassan@hassan-HP-Pavilion-Laptop-15-eh1xxx:~/Desktop/pf assign3$ ./prb_4.out
```

Please choose the item from the list:

- (A) Espresso
- (B) Over Ice
- (C) Chocolate Chillers
- (D) Fusion

a

Nice choice! Our Signature Chillers Are Loved Across 39 Countries Of the world  
please select the flavour

- (A) Very vanilla Chiller
- (B) Cocoa locd
- (C) cookies in Cream
- (D) Hazelnut Mocha Chiller
- (E) Chocolate Macadamia Chiller
- (F) Italian Dolce Chiller
- (G) Caramel Nut Chiller
- (H) Tiramisu Chiller
- (I) Toffee Nut Chiller:

a

Now Please select the size

- (A) Small:361
- (B) Regular:409

a

Please enter the quantity:

3

If you want press any key if not enter N

a

Please choose the item from the list:

- (A) Espresso
- (B) Over Ice
- (C) Chocolate Chillers
- (D) Fusion

Please choose the item from the list:

- (A) Espresso
- (B) Over Ice
- (C) Chocolate Chillers
- (D) Fusion

d

Mix Up Our Best For A Unique ExperiencePlease Select flavour

- (A) iced Lime
- (B) Apple Chiller
- (C) Chai Chiller
- (D) Green Tea Chiller:

a

Now Please select the size

(A) 6-11-205

```
a
Now Please select the size
(A) Small:335
(B) Regular:365b
Please enter the quantity:1
If you want more press any key if not enter  N
n

Your Total bill is 1448
Your bill after including (2.5percent)tax and (400) service charges is 4020.000
if you want to continue press any key if not press n
```