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Subject: Programing Fundamentals LAB

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Problem: 1

```c
#include<stdio.h>
int main()
{
    int array[3][4];
    int i,j;
    printf("Enter 12 numbers \n");
    for(i=0;i<3;i++)
    {
        for(j=0;j<4;j++)
        {
            scanf("%d",&array[i][j]);
        }
    }
    int max=array[0][0];
    for(i=0;i<3;i++)
    {
        for(j=0;j<4;j++)
        {
            if(array[i][j]>max)
            {
                max=array[i][j];
            }
        }
    }
    printf("The max element is %d",max);
    return 0;
}
```

Output

```
PS C:\Users\p22-9269\Desktop\Khizar\Pf lab\EX 08> gcc 1.c
PS C:\Users\p22-9269\Desktop\Khizar\Pf lab\EX 08> ./a.exe
Enter 12 numbers
1
2
3
4
5
6
7
8
9
10
11
12
The max element is 12
```

Problem 2:

```c
#include <stdio.h>

int main()
{
    int A[2][2];
    int B[2][2];
    int i, j;
  printf("Enter values of matrix \n");
  for (i = 0; i < 2; i++)
      {

      for (j = 0; j < 2; j++)
            {
                scanf("%d",&A[i][j]);
            }
      }
     printf("Displaying matrix enterd by user \n");
    for (i = 0; i < 2; i++)
       { for (j = 0; j < 2; j++)
            {
                printf("%d \t",A[i][j]);
            }
            printf("\n");
       }
    for (i = 0; i < 2; i++)
       {
            for (j = 0; j < 2; j++)
        {
            B[i][j] = A[j][i];
        }
       }

    printf("\nTranspose of Matrix : \n");
    for (i = 0; i < 2; i++)
    {
        for (j = 0; j < 2; j++)
        {
            printf("%d \t", B[i][j]);
        }
        printf("\n");
    }

    return 0;
}
```

Output:

```
PS C:\Users\p22-9269\Desktop\Khizar\Pf lab\EX 08> gcc 2.c
PS C:\Users\p22-9269\Desktop\Khizar\Pf lab\EX 08> ./a.exe
Enter values of matrix
1
2
3
4
Displaying matrix enterd by user
1       2
3       4

Transpose of Matrix :
1       3
2       4
```

Problem 3:

```c
#include <stdio.h>

int main()
{
    int a[3][3];
    int i, j, sum = 0;
    printf("Enter the numbers \n");
    for (i = 0; i < 3; i++)
    {
        for (j = 0; j < 3; j++)
        {
            scanf("%d", &a[i][j]);
        }
    }
    printf("DIsplaying the matrix \n ");
    for (i = 0; i < 3; i++)
    {
        for (j = 0; j < 3; j++)
        {
            printf("%d \t",a[i][j]);
        }
        printf("\n");
    }
    for (i = 0; i < 3; i++)
    {
        for (j = 0; j < 3; j++)
        {
            if (i == j)
            {
                sum = sum + a[i][j];
            }
        }
```

```
    }
    printf("sum of diagnol elments is %d", sum);
    return 0;
}
```

Output:

```
PS C:\Users\p22-9269\Desktop\Khizar\Pf lab\EX 08> ./a.exe
Enter the numbers
3
4
5
6
7
8
9
10
11
DIsplaying the matrix
 3      4       5
6       7       8
9       10      11
sum of diagnol elments is 21
```

Problem 4:

```
#include<stdio.h>
int find_small_val(int A[] , int n )
{
  int smallest = 1;
  for(int i = 0; i < n ; i++)
  {
      for(int j=0;j<n;j++)
    if(A[j] == smallest)
    {
      smallest++;
    }
  }
  return smallest;
}
int main ()
{
    int a[10]={10,2,3,4,5,6,7,8,9,1};
    int n=10;
    int b=find_small_val(a,n);
    printf("%d",b);
    return 0;
}
```

Output:

```
PS C:\Users\p22-9269\Desktop\Khizar\Pf lab\EX 08> gcc 4.c
PS C:\Users\p22-9269\Desktop\Khizar\Pf lab\EX 08> ./a.exe
11
PS C:\Users\p22-9269\Desktop\Khizar\Pf lab\EX 08>
```