Lab Assignment

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221-35-909

Problem 01:

```c
#include <stdio.h>

int main()
{
    int arr[] = {1,2,3,1,1,2,2,2,3};
    int length = sizeof(arr)/sizeof(arr[0]);

    int fr[length];
    int visited = -1;

    for(int i = 0; i < length; i++){
        int count = 1;
        for(int j = i+1; j < length; j++){
            if(arr[i] == arr[j]){
                count++;
                fr[j] = visited;
            }
        }
        if(fr[i] != visited)
            fr[i] = count;
    }
    for(int i = 0; i < length; i++){
        if(fr[i] != visited){
            printf("%d occurs %d times \n", arr[i],fr[i]);
        }
    }
    return 0;
}
```

Output:

```
1 occurs 3 times
2 occurs 4 times
3 occurs 2 times

Process returned 0 (0x0)   execution time : 0.050 s
Press any key to continue.
```

Problem 02:

```c
/*Simanta Kumar Roy
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*/

#include <stdio.h>
int main()
{
    int i, j, k, N;
   N = 4;
    k = 1;

    for(i=1; i<=N; i++)
    {
        // Logic to print numbers
        for(j=1; j<=i; j++, k++)
        {
            printf("%3d", k);
        }

        printf("\n");
    }

    return 0;
}
```

Output:

```
  1
  2  3
  4  5  6
  7  8  9 10

Process returned 0 (0x0)   execution time : 0.043 s
Press any key to continue.
```

Problem 03:

```c
#include<stdio.h>
int main( )
{
char sex, ms ;
int age ;
printf ("Enter age, sex, marital status ");
scanf ("%d %c %c", &age, &sex, &ms);
if ( ms == 'M' )
printf ("Driver should be insured");
else
{
if (sex =='M')
 {
    if (age>30)
  printf ("Driver should be insured");
 else
   printf ("Driver should not be insured");
 }
else
  {
    if (age > 25 )
       printf ("Driver should be insured");
    else
       printf ("Driver should not be insured");
     }
}
return 0;
}
```

Output:

```
Enter age, sex, marital status 30 M M
Driver should be insured
Process returned 0 (0x0)   execution time : 10.758 s
Press any key to continue.
```

Problem 04:

```c
#include<stdio.h>
#include<conio.h>
int main()
{
    int c=0, num, res, n, flag=0, i;
    while(c!=4)
    {
        //display menu
        printf("\n1. Factorial of a number\n2. Prime or not\n3. Odd or even\n4. Exit\n");

        //display choice option to the user
        printf("\nEnter your choice:");
        scanf("%d", &c);

        //write case statement for Four options

        switch(c)
        {
            //For factorial block
            case 1:

                //code for factorial functionality
                printf("Enter an integer: ");
                scanf("%d", &num);
                n=num;
                res=num;
                while(num>1)
                {
                    res = res*(num-1);
                {
                    res = res*(num-1);
                    num = num-1;
                }
                printf("\nFactorial of %d is %d. \n\n",n, res);
                break;

            //For prime block
            case 2:

                printf("Enter an integer: ");
                scanf("%d", &num);
                n=num;

                for(i=2;i<=n/2;i++)
                {
                    if(num%i==0)
                    {
                        flag=1;
                        break;
                    }
                }
                if(num==1)
                    printf("\n1 is neither prime nor composite");
                else
                {
                        if(flag==0)
                            printf("\n%d is Prime Number.\n\n", n);
                        else
```

```
                }
            }
            if(num==1)
                printf("\n1 is neither prime nor composite");
            else
            {
                    if(flag==0)
                        printf("\n%d is Prime Number.\n\n", n);
                    else
                        printf("\n%d is not a Prime Number.\n\n", n);
            }
            break;
        case 3:
            printf("Enter an integer: ");
            scanf("%d", &num);
            n=num;

            if(num%2==0)
                printf("\n%d is Even Number.\n\n",n);
            else
                printf("\n%d is Odd Number.\n\n",n);
            break;
        case 4:
            printf("\nExit");
            break;
    }
}
```

Output:

```
1. Factorial of a number
2. Prime or not
3. Odd or even
4. Exit

Enter your choice:1
Enter an integer: 5

Factorial of 5 is 120.


1. Factorial of a number
2. Prime or not
3. Odd or even
4. Exit

Enter your choice:
```

Problem 05:

```c
#include<stdio.h>
int main(){
int i=0,j=0;
int arr[4][3]={{1,2,3},{2,3,4},{3,4,5},{4,5,6}};
int sum = 0;
for(i=0;i<4;i++){
 for(j=0;j<3;j++){
   sum+=arr[i][j];
 }//end of j
}//end of i
printf("%d",sum);
return 0;
}
```

Output:

```
42
Process returned 0 (0x0)   execution time : 0.044 s
Press any key to continue.
```