Contents

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Summary

1 Pattern

Problem 1.1 *Write a program to print the following pattern using **for** loop*

```
1
22
333
4444
55555
. . .
```

Code.

```c
#include<stdio.h>
using namespace std;

int main()
{
        int n,i,j;
        scanf("%d",&n);
        for(i=1;i<=n;i++) {
                for(j=1;j<=i;j++) {
                        printf("%d",i);
                }
                printf("\n");
        }
}
```

Output.

```
5
1
22
333
4444
55555
```

2 Average of Cricket Players

Problem 1.2 *A cricket team has the following table of batting figures for a series of test matches*

Player's Name	Runs	Innings	Times not out
Sachin	8430	230	180
Saurav	4200	130	9
Rahul	3350	105	11

Write a program to read figures from the above form, to calculate the batting average and print out the complete table including the average

    Code.

```c
#include<stdio.h>
#include<vector>
#include<iostream>
using namespace std;

typedef struct stats {
        char name[50];
        int runs;
        int innings;
        int not_out;
        float average;
}stats;

int main()
{
        int i,n;
        char strtr[10];

        int ans;
        while(1) {
                stats players;
                printf("Enter name:");
                scanf("%s",players.name);
                printf("Enter runs, innings, not_out for %s\n",
                players.name);
                scanf("%d %d %d",&players.runs,&players.innings,
                &players.not_out);
                players.average=players.runs*1.0/players.innings;
                g.push_back(players);
                printf("Want more ?(1/0)\nyes=1\tno=0\n");
                scanf("%d",&ans);
                if(ans==0) {
                        break;
                }
        }
        printf("Name\tRuns\tInnings\tNot_Out\tAverage\n");
        for(i=0;i<g.size();i++) {
                printf("%s\t%d\t%d\t%d\t%f\n",g[i].name,
                g[i].runs,g[i].innings
                                ,g[i].not_out, g[i].average);
        }
        return 0;
}
```

    Output.

```
Enter name:Rahul
Enter runs, innings, not_out for Rahul
```

```
3350  105  11
Want more ?(1/0)
yes=1    no=0
1
Enter name:Sachin
Enter runs, innings, not_out for Sachin
8430
230 18
Want more ?(1/0)
yes=1    no=0
1
Enter name:Saurav
Enter runs, innings, not_out for Saurav
4200 130 9
Want more ?(1/0)
yes=1    no=0
1
Enter name:ThePhenomenalRNB
Enter runs, innings, not_out for ThePhenomenalRNB
8888 105 18
Want more ?(1/0)
yes=1    no=0
0
Name       Runs       Innings  Not Out  Average
Rahul      3350       105      11       31.904762
Sachin     8430       230      18       36.652172
Saurav     4200       130      9        32.307693
ThePhenomenalRNB            8888     105      18       84.647621
```

3 Electricity

Problem 1.3 *Calculate electric charge for the following rates*

For first 100 units	*60P per unit*
For next 200 units	*80P per unit*
Beyond 300 units	*90P per unit*

Minimum charge is Rs. 50.00. If total amount is more than 300.00, additional 15% charge is added.

Read names of users and units consumed and print the charge with names

```
1
22
333
4444
55555
. . .
```

Code.

```
#include<stdio.h>
using namespace std;
```

```c
typedef struct charge {
        char name[50];
        int units;
        float cost;
}charge;

float findCost(int n)
{
        float c=0;
        if(n>=100) {
                c+=(100*0.6);
                n-=100;
        } else {
                c+=(n*0.6);
                return c;
        }
        if(n>=200) {
                c+=(200*0.8);
                n-=200;
        } else {
                c+=(n*0.8);
                return c;
        }
        if(n>0) {
                c+=(n*0.9);
                return c;
        }
}

int main()
{
        int n,i;
        scanf("%d",&n);
        charge chs[n];
        for(i=0;i<n;i++) {
                printf("Enter name:");
                scanf("%s",chs[i].name);
                printf("Enter no of units for %s\n",chs[i].name);
                scanf("%d",&chs[i].units);
                chs[i].cost=500.0;
                chs[i].cost+=findCost(chs[i].units);
                if(chs[i].cost>300) {
                        chs[i].cost+=(0.15*chs[i].cost);
                }
        }
        for(i=0;i<n;i++) {
                printf("%s\t%d\t%f\n",chs[i].name,
                chs[i].units,chs[i].cost);
        }
```

```
                return 0;
}
```

Output.

```
3
Enter name: Rudra
Enter no of units for Rudra
250
Enter name: Tokon
Enter no of units for Tokon
10
Enter name: Rohit
Enter no of units for Rohit
300
Rudra    250      782.000000
Tokon    10       581.900024
Rohit    300      828.000000
```

4 Election

Problem 1.4 *An election is contested by five candidates, numbered 1-5. Voting is done on ballot paper. Write a program to read the ballots and count the votes for each candidates. Any vote outside the range 1-5 is "split vote". Count the split votes as well*

Code.

```
#include<stdio.h>
#include<string.h>
#include<algorithm>
#include<vector>
#include<queue>
#include<map>
#include<math.h>

#define ll long long int

int max(int a, int b)
{
        if(a>=b)
                return a;
        return b;
}

using namespace std;

int main()
{
        int n,i,count=0;
        int hash[7];
        memset(hash,0,sizeof(hash));
```

```
        scanf("%d",&n);
        while(n--) {
                count++;
                printf("Whom did %d vote for ? \n",count);
                int vote;
                scanf("%d",&vote);
                if(vote>=1 && vote<=5) {
                        hash[vote]++;
                } else {
                        hash[6]++;
                }
        }
        for(i=1;i<=5;i++) {
                printf("No of people voted for %d = %d\n",i,hash[i]);
        }
        printf("No of invalid votes = %d\n",hash[6]);
        return 0;
}
```

Output.

```
8
Whom did 1 vote for ?
1
Whom did 2 vote for ?
1
Whom did 3 vote for ?
2
Whom did 4 vote for ?
1
Whom did 5 vote for ?
5
Whom did 6 vote for ?
9
Whom did 7 vote for ?
2
Whom did 8 vote for ?
1
No of people voted for 1 = 4
No of people voted for 2 = 2
No of people voted for 3 = 0
No of people voted for 4 = 0
No of people voted for 5 = 1
No of invalid votes = 1
```

5 Factorial

Problem 2.5 *Calculate factorial of a number in C++ using functions*
    Code.

```
#include<iostream>
```

```cpp
using namespace std;

int fact(int n)
{
        if(n==1)
                return 1;
        return n*fact(n-1);
}

int main()
{
        int n;
        cout<<"Enter number"<<endl;
        cin>>n;
        cout<<"Factorial of "<<n<<": "<<fact(n)<<endl;
        return 0;
}
```

Output.

```
Enter number
5
Factorial of 5: 120
```