SHAPEAI DSA BOOTCAMP PROJECT

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1. **Write a program to Swap to two numbers.**
   - ➢ int a,b,temp;
   - ➢ cout<<"Enter 1st no.:- ";
   - ➢ cin>>a;
   - ➢ cout<<"Enter 2nd no.:- ";
   - ➢ cin>>b;
   - ➢ cout<<"\nBefore Swapping\n";
   - ➢ cout<<"1st no:- "<<a;
   - ➢ cout<<"\n2nd no:- "<<b;
   - ➢ temp = a;
   - ➢ a = b;
   - ➢ b = temp;
   - ➢ cout<<"\n\nAfter Swapping";
   - ➢ cout<<"\n1st no:- "<<a;
   - ➢ cout<<"\n2nd no:- "<<b;

2. **Write a program to find the largest number among three numbers entered by the user.**
   - ➢ int a,b,c,max;
   - ➢ cout<<"Enter 1st no.:- ";
   - ➢ cin>>a;
   - ➢ cout<<"Enter 2nd no.:- ";
   - ➢ cin>>b;
   - ➢ cout<<"Enter 3rd no.:- ";
   - ➢ cin>>c;
   - ➢ max = a>b ? a>c?a:c : b>c?b:c;
   - ➢ cout<<"Largest no:- "<<max;

3. **Write a program to check whether a year entered by a user is Leap year or not.**
   - ➢ int year;
   - ➢ cout<<"Enter the year for leap check:- ";
   - ➢ cin>>year;
   - ➢ if(year%400==0)
   - ➢ {
   - ➢   cout<<year<<" is a leap year";
   - ➢ }
   - ➢ else if(year%100==0)
   - ➢ {
   - ➢   cout<<year<<" is not a leap year";
   - ➢ }
   - ➢ else if(year%4==0)
   - ➢ {
   - ➢   cout<<year<<" is a leap year";
   - ➢ }
   - ➢ else
   - ➢ {
   - ➢   cout<<year<<" is not a leap year";
   - ➢ }

4. Write a program to display Fibonacci Series upto nth term. (Using loops)

```cpp
int a=0,b=1,c,n;
cout<<"Enter no. of terms:- ";
cin>>n;
if(n<1)
{
    cout<<"Invalid Input";
}
else if(n==1)
{
    cout<<"0";
}
else if(n==2)
{
    cout<<"0\n1\n";
}
else
{
    cout<<"0\n1\n";
    for(int i=2;i<n;i++)
    {
        c = a+b;
        cout<<c<<"\n";
        a = b;
        b = c;
    }
}
```

5. Write a program to check whether a number is Prime or Not.

```cpp
int i,c=0,n;
cout<<"Enter no. for prime check:- ";
cin>>n;
for(i=2;i<=n/2;i++)
{
    if(n%i==0)
    {
        cout<<n<<" is not a Prime no.";
        c=1;
        break;
    }
}
if(c==0)
{
    cout<<n<<" is a Prime no.";
}
```

6. **Print this pattern using loops**
   For n=5

   ```
           *
          * *
         * * *
        * * * *
       * * * * *
   ```

   - ➢ int i,j,n=5;
   - ➢ for(i=0;i<5;i++)
   - ➢ {
   - ➢   for(j=n;j>i;j--)
   - ➢   {
   - ➢   cout<<" ";
   - ➢   }
   - ➢   for(j=0;j<=i;j++)
   - ➢   {
   - ➢   cout<<"* ";
   - ➢   }
   - ➢   cout<<"\n";
   - ➢ }

7. **Write a program that takes n elements from the user and displays the second largest element of an array.**

   - ➢ int i,a,b,temp,n;
   - ➢ cout<<"Enter no of values:- ";
   - ➢ cin>>n;
   - ➢ if(n<2) {
   - ➢   cout<<"INVALID INPUT!!! Enter no. greater than two"; }
   - ➢ else {
   - ➢   cout<<"Enter value 1:- ";
   - ➢   cin>>a;
   - ➢   cout<<"Enter value 2:- ";
   - ➢   cin>>b;
   - ➢   if(b>a)
   - ➢   {
   - ➢   temp = a;
   - ➢   a = b;
   - ➢   b = temp;
   - ➢   }
   - ➢   for(i=3;i<=n;i++)
   - ➢   {
   - ➢   cout<<"Enter value "<<i<<":- ";
   - ➢   cin>>temp;
   - ➢   if(temp > a)
   - ➢   {
   - ➢   b = a;
   - ➢   a = temp;
   - ➢   }
   - ➢   else if(temp > b)
   - ➢   {
   - ➢   b = temp;
   - ➢   }
   - ➢   }
   - ➢ }
   - ➢ cout<<"2nd largest value from amongst the entered values is "<<b;

8. Hackerrank (https://www.hackerrank.com/challenges/array-left-rotation/problem)

```
int s = sizeof(arr)/sizeof(arr[0]);
int i,j,t;
for(i=0;i<s;i++)
{
    cout<<arr[i]<<" ";
}
cout<<"\n";
for(i=0;i<d;i++)
{
    t = arr[0];
    for(j=0;j<(s-1);j++)
    {
        arr[j] = arr[j+1];
    }
    arr[s-1] = t;
}
return arr;
```

9. Hackerrank (https://www.hackerrank.com/challenges/grading/problem)

```
int n = sizeof(grades)/sizeof(grades[0]);
int i,j,l,c;
for(i=0;i<n;i++)
{
    l = grades[i];
    c = 0;
    for(j=0;j<3;j++)
    {
        if((l+j)%5 == 0 && l >= 38)
        {
            c = 1;
            break;
        }
    }
    if(c == 1)
    {
        grades[i] += j;
    }
}
return grades;
```

10. Hackerrank (https://www.hackerrank.com/challenges/camelcase/problem)

```
int i,c=1,a;
for(i=0;i<s.length();i++)
{
    if(isupper(s[i]))
    {
        c++;
    }
}
return c;
```