NDIIT

NEW DELHI INSTITUTE FOR INFORMATION TECHNOLOGY AND MANAGEMENT

ASSIGNMENT: C++ PROGRAMMING

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ASSIGNMENT

Question 01. C++ program to print Fibonacci series upto N terms

Answer -

In case of fibonacci series, next number is the sum of previous two numbers for example 0, 1, 1, 2, 3, 5, 8, 13, 21 etc. The first two numbers of fibonacci series are 0 and 1 etc..

PROGRAM

```
#include
<iostream>   using
namespace std;

int main()
{
int
num,n1=0,n2=1,n3,i;
cout<<"Enter the
number - ";
cin>>num;
if(num == 0)
{    cout<<n1;

 }   else if (num == 1)

 {     cout<<n1<<"
"<<n2<<" ";
 }   else   {
    cout<<n1<<"
"<<n2<<" ";

for(i=2;i<num;++i)

      {

n3=n1+n2;
```

```
cout<<n3<<" ";
n1=n2;
  n2=n3;


}
}
   return 0;
}
```

OUTPUT

```
Input: n = 7
Output: 0, 1, 2, 3, 5
```

Question 02. C++ program to Sort Names in an Alphabetical Order

Answer –

PROGRAM

```
#include<iostream>

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

using namespace
std; int main()
{
        char str[5][15],
s[15];          int i, a,
round;
        cout<<"\n Enter Any Five Names\n";
for(i=0; i<5; i++)
        {
                gets (str[i]);
        }
        for(round=1; round<5; round++)
        {
                for ( i = 0; i < 5-round; i++)
                {
                        a=strcmp(str[i], str[i+1]);
if(a>0){
                                strcpy(s, str[i]);
                                strcpy(str[i], str[i+1]);
strcpy(str[i+1], s);
                        }
                }

}
        cout<<"\n Names in dicitionary order \n";
for(i=0; i<5; i++)
        {
                puts (str[i]);
        }
        return 0;
}
```

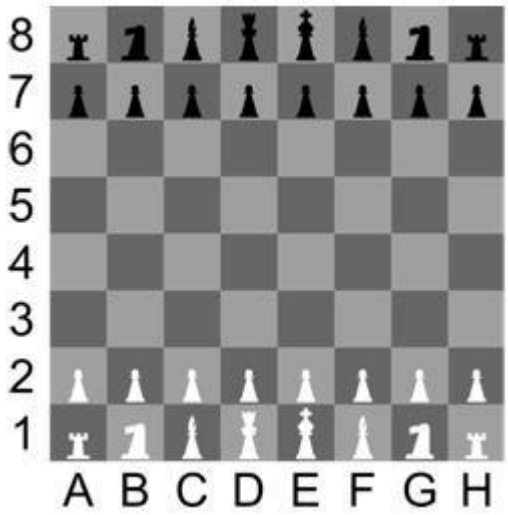
OUTPUT

```
Input: Enter any five names
       TEJAS
       NAMAN
       SONIA
       PIKU
       SONU
```

```
Output: NAMAN
        PIKU
        SONIA
        SONU
        TEJAS
```

Question 03. C++ program to determine the color of chess square

Answer - A chess board is equally divided into 64 identical squares that are black and white alternately. Each square on the chessboard can be identified by the coordinates as 'A' to 'H' on the horizontal axis and '1' to '8' on the vertical axis as shown in the figure.



Each square can be identified using the coordinate system specified above. For example, the square with coordinates G5 is colored Black, A6 is colored White and so on...

PROGRAM

```
#include<iostream>
#include<cctype>
using namespace
std;

int main()
{   char str[10], x;
    cout << "Enter the coordinates of the square, \
    \nthe first coordinate A to H and second coordinate 1
to 8: ";     cin.getline(str, 10);     x = str[0];     x =
tolower(x);     str[0] = x;
    if (str[0] == 'a' || str[0] == 'c' || str[0] == 'e' || str[0]
== 'g')     {
        if (str[1] == '1' || str[1] == '3' || str[1] == '5' ||
str[1] == '7')             cout << "The block is black.";
else
            cout << "The block is white.";
    }
else
{
        if (str[1] == '1' || str[1] == '3' || str[1] == '5' ||
str[1] == '7')             cout << "The block is white.";
else
            cout << "The block is black.";
    }
    return
0; }
```

OUTPUT

```
Input: Enter the coordinates of the square
       The first coordinate 1 to 8 the second coordinate A to H : 5B

Output: The block is white.
```

Question 04. C++ program to print all the Repeated Numbers with Frequency in an
Array

Answer –

PROGRAM

```
#include<bits/stdc++.h>
using namespace std;
int main()
{
    int i,j,n,count;

    cout<<"Enter no. of
elements:";     cin>>n;
    int set[n];
    cout<<"\nEnter the elements:";
    for(i=0; i<n; i++)
    {
       cin>>set[i];
    }
    int flag[n]={0};
    cout<<"\nRepeated Numbers with their frequency:";
for(i=0; i<n; i++)
    {
count=0;
      if(flag[i]!=1)
      {
         for(j=0; j<n; j++)
         {
            if(set[i]==set[j])
            {
              count++;
flag[j]=1;
            }
}
         if(count>1)
         {
           cout<<"\n"<<set[i]<<" -> "<<count;
         }
      }
} return
0;
}
```

OUTPUT

```
   Array length: 10
    Array input: 2 5 3 2 4 5 3 6 7 3
    Output:
    Repeated number with their Frequency
    3       ->    3
5     ->    2
    2     ->     2
```

Question 05. Representing System of Linear Equations using Matrix.

Answer –

PROGRAM

```
#include <iostream> using
namespace std;

int main()
{
    cout<< "Enter the number of variables in the equations:
";     int n;          cin>>  n;     char var = 'x';     int
a[n][n],b[n][1];

    cout << "\nEnter the coefficients of each variable for each
equations";     for (int i = 0; i< n; i++)
    {
        for (int j = 0; j < n; j++)
        {
            cin>> a[i][j];
        }
        cin>> b[i][0];
    }          cout<< "\nLinear Equation in Matrix
representation is: \n";     for (int i = 0; i< n; i++)
    {
        for (int j = 0; j < n; j++)
        {
            cout<<" "<< a[i][j];
}
```

```
        cout<< "   " <<static_cast<char>(var) << "  =  " << b[i][0]<<
"\n";          var++;

}
    return 0;
}
```

OUTPUT

```
   Output: Enter the numbers of the variables in the equation
           3
         Enter the coefficient of each variable for each equation
           1 2 3 4
         5 6 7 8
9 1 2 5
          Linear equation in matrix representation is :
           1 2 3 x  = 4
           5 6 7 y  = 8
           9 1 2 z  = 5
```

Question 06. C++ program to find largest list of prime numbers

Answer –

Algorithm:

- Created a function to return prime number.
- If the entered number is less then less than 2 then print invalid selection end the program.
- And if n is not less than 2 check if (n%2)==0 then print 2, n/2 times, else n can be a odd number.
- Then N=N-3, and 2 print N/2 times and at last print 3 program end.

PROGRAM

```
#include<bits/stdc++.h>
using namespace
std;

void list_prime(int n)

{  int
i;
if(n<2){
    cout<<"Invalid selection\n";
}
else if(n%2==0)
{
    for(i=1;i<=n/2;i++)
    {
        cout<<2<<" ";
    }
}  else     {
n=n-3;
        for(i=1;i<=n/2;i++)
         cout<<2<<"
";
cout<<3<<" ";
    } }
int main()
{ int
i,n;

cout<<"Enter a number
:\n"; cin>>n;
list_prime(n); return 0;
}
```

OUTPUT

```
      Output: Enter the numbers of the variables in the equation
          3
        Enter the coefficient of each variable for each equation
       1 2 3 4
5 6 7 8
          9 1 2 5
         Linear equation in matrix representation is :
          1 2 3 x  = 4
          5 6 7 y  = 8
```
