1	Write a program to print the calendar of 2020. i)Horizontally ii)Vertically
| | ```cpp
#include<bits/stdc++.h>

using namespace std;

string days[7] = {"Mon", "Tue", "Wed", "Thu", "Fri", "Sat", "Sun"};

string monthsName[12] = {"Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jul", "Aug", "Sept", "Oct", "Nov", "Dec" };

int months[12] = {31, 29, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31};


void printVerticalMonth(int sDay, int totalDays)

{

    sDay--;

    for(int i=0; i<7; i++)

    {

      cout<<days[i];

      for(int j=0; (i + 7*j)<=(totalDays+sDay); j++)

        if((i+7*j)-sDay <=0)

          cout<<setw(5)<<"";

        else

          cout<<setw(5)<<(i+7*j)-sDay ;

      cout<<endl;

    }

    cout<<endl;

    return;

}
``` |

```cpp
void printHorizontalMonth(int sDay, int totalDays)

{

   sDay--;

   cout<<setw(5)<<days[0];

   cout<<setw(5)<<days[1];

   cout<<setw(5)<<days[2];

   cout<<setw(5)<<days[3];

   cout<<setw(5)<<days[4];

   cout<<setw(5)<<days[5];

   cout<<setw(5)<<days[6];

   cout<<endl;

   for(int i=0; i<=(sDay+totalDays)/7; i++)

   {

      for(int j=0; j<7; j++)

         if((j+7*i)-sDay <=0 || (j+7*i)-sDay > totalDays)

            cout<<setw(5)<<"";

         else

            cout<<setw(5)<<(j+7*i)-sDay ;

      cout<<endl;

   }

   cout<<endl;

   return;

}



void printVerticalCalendar()

{

   int sDay=2;

   for(int i=0;i<12;i++)

   {
```

```cpp
            cout<<monthsName[i]<<" 2020"<<endl;

            printVerticalMonth(sDay, months[i]);

            sDay = (sDay+months[i])%7;

        }

        return;

}


void printHorizontalCalendar()

{

    int sDay=2;

    for(int i=0;i<12;i++)

    {

        cout<<monthsName[i]<<" 2020"<<endl;

        printHorizontalMonth(sDay, months[i]);

        sDay = (sDay+months[i])%7;

    }

    return;

}

int main()

{

    printHorizontalCalendar();

cout<<"*********************************************************************************"<<endl;

    printVerticalCalendar();

    return 0;

}
```

```
Jan 2020
  Mon  Tue  Wed  Thu  Fri  Sat  Sun      ****************************************
                 1    2    3    4    5    Jan 2020
   6    7    8    9   10   11   12        Mon          6   13   20   27
  13   14   15   16   17   18   19        Tue          7   14   21   28
  20   21   22   23   24   25   26        Wed     1    8   15   22   29
  27   28   29   30   31                  Thu     2    9   16   23   30
                                          Fri     3   10   17   24   31
Feb 2020                                  Sat     4   11   18   25
  Mon  Tue  Wed  Thu  Fri  Sat  Sun       Sun     5   12   19   26
                           1    2
   3    4    5    6    7    8    9         Feb 2020
  10   11   12   13   14   15   16        Mon          3   10   17   24
  17   18   19   20   21   22   23        Tue          4   11   18   25
  24   25   26   27   28   29             Wed          5   12   19   26
                                          Thu          6   13   20   27
Mar 2020                                  Fri          7   14   21   28
  Mon  Tue  Wed  Thu  Fri  Sat  Sun       Sat     1    8   15   22   29
                                1         Sun     2    9   16   23
   2    3    4    5    6    7    8
   9   10   11   12   13   14   15        Mar 2020
  16   17   18   19   20   21   22        Mon          2    9   16   23   30
  23   24   25   26   27   28   29        Tue          3   10   17   24   31
  30   31                                 Wed          4   11   18   25
                                          Thu          5   12   19   26
Apr 2020                                  Fri          6   13   20   27
  Mon  Tue  Wed  Thu  Fri  Sat  Sun       Sat          7   14   21   28
                 1    2    3    4    5     Sun     1    8   15   22   29
   6    7    8    9   10   11   12
  13   14   15   16   17   18   19        Apr 2020
```

2	Write a program to separate all odd and even number in an array.

```cpp
#include<bits/stdc++.h>

#define ll long long

#define endl '\n'

using namespace std;

#define fast ios_base::sync_with_stdio(false); cin.tie(0); cout.tie(0);



void print(int a[], int n)

{

    for(int i=0;i<n;i++)

        cout<<a[i]<<" ";

    cout<<endl;

    return;
```

```cpp
}

void seperate(int a[], int n)

{

    int right = n-1;

    int left =0;

    while(right>=left)

    {

        while(a[right]%2) right--;

        while(a[left]%2==0) left++;

        if(right<left) break;

        swap(a[left], a[right]);

    }

    return;

}


int main()

{

    int a[] = {7,5,6,5,5,8,1,5,36,485,5,3,335,54};

    int n = sizeof(a)/sizeof(a[0]);

    seperate(a, n);

    print(a, n);

    return 0;

}
```

OUTPUT - 54 36 6 8 5 5 1 5 5 485 5 3 335 7

3	Write a program to swap two numbers, using different possible combination of passing variable as value, pointer and reference.

```cpp
#include<bits/stdc++.h>

#define ll long long

#define endl '\n'

using namespace std;
```

```cpp
#define fast ios_base::sync_with_stdio(false); cin.tie(0); cout.tie(0);


void swap1(int a, int b)

{

    int t;

    t=a, a=b, b=t;

}



void swap2(int &a, int &b)

{

    int t;

    t=a, a=b, b=t;

}



void swap3(int *a, int *b)

{

    int t;

    t=*a, *a = *b, *b=t;

}



void swap4(int *a, int *b)

{

    int t;

    t=*a, a = b, *b=t;

}



void swap5(int *a, int *b)

{

    int *t;
```

```cpp
    t=a, a = b, b=t;
}


void swap6(int &a, int &b)
{
    int &t=a;
    a = b, b=t;
}
int main()
{
    int a=3, b=5;
    cout<<"Before swap1 a = "<<a<<", b = "<<b<<endl;
    swap1(a, b);
    cout<<"After  swap1 a = "<<a<<", b = "<<b<<endl<<endl;


    a=3, b=5;
    cout<<"Before swap2 a = "<<a<<", b = "<<b<<endl;
    swap2(a, b);
    cout<<"After  swap2 a = "<<a<<", b = "<<b<<endl<<endl;


    a=3, b=5;
    cout<<"Before swap3 a = "<<a<<", b = "<<b<<endl;
    swap3(&a, &b);
    cout<<"After  swap3 a = "<<a<<", b = "<<b<<endl<<endl;


    a=3, b=5;
    cout<<"Before swap4 a = "<<a<<", b = "<<b<<endl;
    swap4(&a, &b);
    cout<<"After  swap4 a = "<<a<<", b = "<<b<<endl<<endl;
```

```cpp
    a=3, b=5;

    cout<<"Before swap5 a = "<<a<<", b = "<<b<<endl;

    swap5(&a, &b);

    cout<<"After  swap5 a = "<<a<<", b = "<<b<<endl<<endl;



    a=3, b=5;

    cout<<"Before swap6 a = "<<a<<", b = "<<b<<endl;

    swap6(a, b);

    cout<<"After  swap6 a = "<<a<<", b = "<<b<<endl<<endl;



    return 0;

}
```



```
"C:\Users\Abhishek Pratap\Documents\Test.exe"

Before swap1 a = 3, b = 5
After   swap1 a = 3, b = 5

Before swap2 a = 3, b = 5
After   swap2 a = 5, b = 3

Before swap3 a = 3, b = 5
After   swap3 a = 5, b = 3

Before swap4 a = 3, b = 5
After   swap4 a = 3, b = 3

Before swap5 a = 3, b = 5
After   swap5 a = 3, b = 5

Before swap6 a = 3, b = 5
After   swap6 a = 5, b = 5
```