```
#include <iostream>

using namespace std;

const int size = 10;

void push(int stack[size], int &top)
{
    int value;
    if(top == size-1)
        cout<<"stack is full, insertion is not possible\n";

    else
    {
        cout<<"Enter any number : ";
        cin>>value;

        ++top;
        stack[top] = value;
    }
}

void pop(int stack[size], int &top)
{
    int value;
    if(top == -1)
        cout<<"stack is empty, deletion is not possible\n";
    else
    {
        value = stack[top];
        --top;
    }
}

void print(int stack[size], int top)
{
    int i;
    if(top == -1)
        cout<<"stack is empty, printing is not possible\n";
    else
    {
        for(i=0; i<=top; i++)
        {
            cout<<stack[i]<<"\t";
        }
        cout<<"\n";
    }
}

void con_array_even(int stack[size], int a[10], int top)
{
    int i, j=0;
    cout<<"Even values from the stack : \n";
    for(i=0;i<=top;i++)
    {
        if(stack[i]%2==0)
        {
            a[j]=stack[i];
            cout<<a[j]<<"   ";
```

```
            ++j;
        }
    }
    cout<<"\n";
}

void con_array_odd(int stack[size], int b[10], int top)
{
    int i, j=0;
    cout<<"Odd values from the stack : \n";
    for(i=0;i<=top;i++)
    {
        if(stack[i]%2!=0)
        {
            b[j]=stack[i];
            cout<<b[j]<<"   ";
            ++j;
        }
    }
    cout<<"\n";
}


int main()
{
    int stack[size];
    int top = -1;
    int x;
    int a[10],b[10];

    for( ; x != 6; )
      {
            cout<<"1- push \n";
            cout<<"2- pop \n";
            cout<<"3- print \n";
            cout<<"4-convert even values from stack to one dimensional array\n";
        cout<<"5-convert odd values from stack to  one dimensional array \n";
        cout<<"6-Exit\n";

            cout<<"Enter your choice : ";
            cin>>x;

            switch (x)
                  {
                        case 1:push(stack, top); break;
                        case 2:pop(stack, top); break;
                        case 3:print(stack, top); break;
                        case 4:con_array_even(stack, a, top);break;
                        case 5:con_array_odd(stack, b, top);break;
                        default:cout<<"Error\n";
                  }

      }

    return 0;
}
```

```
#include <iostream>

using namespace std;

const int size = 6;

void push(int stack[size], int &top)
{
    int value;
    if(top == size-1)
        cout<<"stack is full, insertion is not possible\n";

    else
    {
        cout<<"Enter any number : ";
        cin>>value;

        ++top;
        stack[top] = value;
    }
}

void pop(int stack[size], int &top)
{
    int value;
    if(top == -1)
        cout<<"stack is empty, deletion is not possible\n";
    else
    {
        value = stack[top];
        --top;
    }
}

void print(int stack[size], int top)
{
    int i;
    if(top == -1)
        cout<<"stack is empty, printing is not possible\n";
    else
    {
        for(i=0; i<=top; i++)
        {
            cout<<stack[i]<<"\t";
        }
        cout<<"\n";
    }
}

void prime(int stack[size], int &top)
{
      int i, j, x;

      for(i = 0; i <= top; i++)
      {
            if(stack[i] != 1)
            {
                  x = 0;
                  for(j =2; j < stack[i]; j++)
```

```
                {
                      if(stack[i] % j == 0)
                            x = 1;
                }

                if(x == 0)
                      cout<<stack[i]<<"\t";
            }

            else
                  cout<<stack[i]<<"\t";
      }
      cout<<"\n";
}

int main()
{
    int stack[size];
    int top = -1;
    int x;

    for( ; x != 5; )
      {
            cout<<"1- push \n";
            cout<<"2- pop \n";
            cout<<"3- print \n";
            cout<<"4- prime \n";
            cout<<"5- exit \n";

            cout<<"Enter your choice : ";
            cin>>x;

            switch (x)
                  {
                        case 1:push(stack, top); break;
                        case 2:pop(stack, top); break;
                        case 3:print(stack, top); break;
                        case 4:prime(stack, top); break;
                        default:cout<<"Error\n";
                  }

      }

    return 0;
}
```

```
#include <iostream>

using namespace std;

const int size = 7;

void push(int stack[size], int &top)
{
    int value;
    int i;

    for(i=0; i<=5; i++)
            {
                  cout<<"Enter any number : ";
                  cin>>value;

                  ++top;
                  stack[top]=value;
            }
}

void print(int stack[size], int top)
{
    int i;
    if(top == -1)
        cout<<"stack is empty, printing is not possible\n";
    else
    {
        for(i=0; i<=top; i++)
        {
            cout<<stack[i]<<"\t";
        }
        cout<<"\n";
    }
}

int main()
{
    int stack[size];
    int top = -1;

    push(stack, top);
    print(stack, top);


    return 0;
}
```

لديك stack المطلوب تحويل القيم الى stack حجمه 5 قيم علما ان حجمه 10 يحتوي على 3 ثاني .

Q/You have a stack of size 5 to convert the values into a second stack of 3 values, with a size of 10.

```
#include <iostream>

using namespace std;

const int size1 = 5;
const int size2 = 10;

void push(int stack[size1], int &top)
{
    int value;
    if(top == size1-1)
        cout<<"stack is full, insertion is not possible\n";

    else
    {
        cout<<"Enter any number : ";
        cin>>value;

        ++top;
        stack[top] = value;
    }
}

void print(int stack[size1], int top)
{
    int i;
    if(top == -1)
        cout<<"stack is empty, printing is not possible\n";
    else
    {
        for(i=0; i<=top; i++)
        {
            cout<<stack[i]<<"\t";
        }
        cout<<"\n";
    }

}

void pushst2(int stack[size1], int stack2[size2], int &top, int &top2)
{
      int i;

      for(i=0; i<=top; i++)
      {
            ++top2;
            stack2[top2] = stack[i];
      }
}

void print2(int stack2[size2], int top2)
```

```
{
    int i;
    if(top2 == -1)
        cout<<"stack is empty, printing is not possible\n";
    else
    {
        for(i=0; i<=top2; i++)
        {
            cout<<stack2[i]<<"\t";
        }
        cout<<"\n";
    }

}

int main()
{
    int stack[size1], stack2[size2]={1,2,3};
    int top = -1;
    int top2 = 2;
    int x;

    for( ; x != 5; )
      {
            cout<<"1- push \n";
            cout<<"2- print \n";
            cout<<"3-convert to stack 2 \n";
            cout<<"4-print stack 2 \n";
        cout<<"5-Exit\n";

            cout<<"Enter your choice : ";
            cin>>x;

            switch (x)
                  {
                        case 1:push(stack, top); break;
                        case 2:print(stack, top); break;
                        case 3:pushst2(stack, stack2, top, top2);break;
                        case 4:print2(stack2, top2);break;
                        default:cout<<"Error\n";
                  }

      }

    return 0;
}
```

```
#include <iostream>

using namespace std;

const int size = 8;

void pop(int stack[size], int &top)
{
      int value;
      int i;

      for(i=0; i<=3; i++)
      {
            value=stack[top];
            --top;
      }

}

void print(int stack[size], int top)
{
    int i;
    if(top == -1)
        cout<<"stack is empty, printing is not possible\n";
    else
    {
        for(i=0; i<=top; i++)
        {
            cout<<stack[i]<<"\t";
        }
        cout<<"\n";
    }
}

int main()
{
    int stack[size]={1,2,3,4,5,6};
    int top = 5;

    print(stack, top);
    cout<<"\n";
    pop(stack, top);
    cout<<"\n";
    print(stack, top);


    return 0;
}
```

```
#include <iostream>

using namespace std;

const int size = 8;

void print(int stack[size], int top)
{
    int i;
    if(top == -1)
        cout<<"stack is empty, printing is not possible\n";
    else
    {
        for(i=0; i<=top; i++)
        {
            cout<<stack[i]<<"\t";
        }
        cout<<"\n";
    }
}

int main()
{
    int stack[size]={3,5,8,4,9,7};
    int top = 5;

    print(stack, top);


    return 0;
}
```

Q2:) You have stack of size (10) contain (5) element , Write program segment with draw to:
a) Add (7) elements to stack ?
b) convert even values to another empty stack of size (6)?
c) print the final state for new stack ?

```
#include <iostream>

using namespace std;

const int size = 10;

void push(int stack[size], int &top)
{
    int value, x, i;

    for(i=0; i<=6; i++)
      {
            if(top == size-1)
            {
                  x=stack[top];
                  --top;
                  cout<<"Enter any number : ";
                  cin>>value;

                  ++top;
                  stack[top] = value;
            }

            else
            {
                  cout<<"Enter any number : ";
                  cin>>value;

                  ++top;
                  stack[top] = value;
            }
      }
}


void print(int stack[size], int top)
{
    int i;
    if(top == -1)
        cout<<"stack is empty, printing is not possible\n";
    else
    {
        for(i=0; i<=top; i++)
        {
            cout<<stack[i]<<"\t";
        }
        cout<<"\n";
    }
}

void con_stack_even(int stack[size], int a[10], int top)
```

```
{
    int i, j=0;
    cout<<"Even values from the stack : \n";
    for(i=0;i<=top;i++)
    {
        if(stack[i]%2==0)
        {
            a[j]=stack[i];
            cout<<a[j]<<"   ";
            ++j;
        }
    }
    cout<<"\n";
}


int main()
{
    int stack[size]={1,2,3,4,5};
    int top = 4;
    int a[6];

    push(stack, top);
    print(stack, top);
    con_stack_even(stack, a, top);

    return 0;
}
```

write program to split the content of stack S into two stacks one for numbers larger than 50 and the other for numbers smaller or equal to 50.

```
#include <iostream>

using namespace std;

const int size = 10;

void push(int stack[size], int &top)
{
    int value;
    if(top == size-1)
        cout<<"stack is full, insertion is not possible\n";

    else
    {
        cout<<"Enter any number : ";
        cin>>value;

        ++top;
        stack[top] = value;
    }
}

void pop(int stack[size], int &top)
{
    int value;
    if(top == -1)
        cout<<"stack is empty, deletion is not possible\n";
    else
    {
        value = stack[top];
        --top;
    }
}

void print(int stack[size], int top)
{
    int i;
    if(top == -1)
        cout<<"stack is empty, printing is not possible\n";
    else
    {
        for(i=0; i<=top; i++)
        {
            cout<<stack[i]<<"\t";
        }
        cout<<"\n";
    }
}

void larg(int stack[size], int top, int larager[size])
{
      int i, j=0;

      for(i=0; i<=top; i++)
```

```
      {
            if(stack[i] > 50)
            {
                  larager[j] = stack[i];
                  cout<<larager[j]<<"\t";
                  ++j;
            }
      }
      cout<<"\n";
}

void small(int stack[size], int top, int smaller[size])
{
      int i, j=0;

      for(i=0; i<=top; i++)
      {
            if(stack[i] <= 50)
            {
                  smaller[j] = stack[i];
                  cout<<smaller[j]<<"\t";
                  ++j;
            }
      }
      cout<<"\n";
}


int main()
{
    int stack[size],larager[size], smaller[size];
    int top = -1;
    int x;

    for( ; x != 6; )
      {
            cout<<"1- push \n";
            cout<<"2- pop \n";
            cout<<"3- print \n";
            cout<<"4-stack for numbers larger than 50 \n";
            cout<<"5-stack for numbers smaller or equal to 50 \n";
        cout<<"6-Exit\n";

            cout<<"Enter your choice : ";
            cin>>x;

            switch (x)
                  {
                        case 1:push(stack, top); break;
                        case 2:pop(stack, top); break;
                        case 3:print(stack, top); break;
                        case 4:larg(stack, top, larager);break;
                        case 5:small(stack, top, smaller);break;
                        default:cout<<"Error\n";
                  }

      }

    return 0;
```

```
}
```

```
#include <iostream>

using namespace std;

const int size = 6;

void push(int stack[size], int &top)
{
    int value;
    if(top == size-1)
        cout<<"stack is full, insertion is not possible\n";

    else
    {
        cout<<"Enter any number : ";
        cin>>value;

        ++top;
        stack[top] = value;
    }
}

void pop(int stack[size], int &top)
{
    int value;
    if(top == -1)
        cout<<"stack is empty, deletion is not possible\n";
    else
    {
        value = stack[top];
        --top;
    }
}

void print(int stack[size], int top)
{
    int i;
    if(top == -1)
        cout<<"stack is empty, printing is not possible\n";
    else
    {
        for(i=0; i<=top; i++)
        {
            cout<<stack[i]<<"\t";
        }
        cout<<"\n";
    }
}

int main()
{
    int stack[size];
    int top = -1;
    int x;

    for( ; x != 4; )
      {
            cout<<"1- push \n";
            cout<<"2- pop \n";
```

```
            cout<<"3- print \n";
            cout<<"4- exit \n";

            cout<<"Enter your choice : ";
            cin>>x;

            switch (x)
                  {
                        case 1:push(stack, top); break;
                        case 2:pop(stack, top); break;
                        case 3:print(stack, top); break;
                        default:cout<<"Error\n";
                  }

      }

    return 0;
}
```