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Title: Stack Implementation in java

Aims:

- Getting practice with Stack
- Getting practice with push, peek, pop, size and isempty methods.

Tasks:

1. Execute the following code,
 - a. Stack class with push, pop and peek method.

```
public class stack {  
  
    int stack[]=new int[5];  
    int top=0;  
  
    public void push(int data)  
    {  
        stack[top]=data;  
        top++;  
    }  
  
    public int pop()  
    {  
        int data;  
        top--;  
        data=stack[top];  
        stack[top]=0;  
  
        return data;  
    }  
  
    public int peek()  
    {  
        int data;  
        data=stack[top-1];  
        return data;  
    }  
  
    public void display()  
    {  
        for(int i=0; i<stack.length; i++)  
        {
```

```

        System.out.print(" "+stack[i]);
    }
}
}

```

b. Main class

```

public class main_method {
    public static void main(String[] args) {
        stack st=new stack();
        st.push(2);
        st.push(3);

        System.out.println("The peek value is : "+st.peak());

        st.push(5);
        st.push(7);

        System.out.println("The pop value is : "+ st.pop());

        st.display();
    }
}

```

c. Size method (To identify the size of the array)

```

public int size()
{
    return top;
}

```

d. isEmpty() method

```

public boolean isEmpty()
{
    return top<=0;
}

```

e. Checking stack overflow

```

public void push(int data)
{
    if(top==5)
    {
        System.out.println("Stack is full");
    }
    else{
        stack[top]=data;
        top++;
    }
}

```

```
}
```

f. Checking stack underflow

```
public int pop()
{
    int data=0;
    if(isEmpty())
    {
        System.out.println("The stack is empty");
    }
    else
    {
        top--;
        data=stack[top];
        stack[top]=0;
    }
    return data;
}
```

Exercise:

1. Create a stack with the size seven.
2. Push 12, 34, 45, 56 into the stack
3. Peek 34 inside the stack
4. Also push 33 and 55 into that stack
5. Peek top element into the stack
6. Pop top element and display
7. Also push 3 more element and display
8. Explain the error
9. Also pop up to 8 element and explain the error.
10. Modify the code for overcoming error that you are faced in (8) and (9).

Discussion:

- Usage of Stack in practical situation
- Advantages and Disadvantages of Stack
- Stack overflow and Stack Underflow error