Mohammad Ali Jinnah University

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Lab Task 6

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Id: FA19-BSSE-0014

Subject: Data Structures and Algorithms Lab (CS 2511)

Lab Title: Stack

Section: AM

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Q1) Sort an stack by using another stack.

Code:

```
class Question01{

   public static void main(String args[]) {
      Random rand = new Random();
      Stack input = new Stack();
      for (int i = 0; i < 10; i++) {
         input.push(rand.nextInt(100));
      }


      System.out.println("Elements on stack before sorting: "+ input.toString());

      input = sorting(input);

      System.out.println("Elements on stack after sorting: "+ input.toString());

   }


   public static Stack<Integer> sorting(Stack<Integer> stack) {
      int lenght = stack.size();
      int tempVar, min ;
      Stack<Integer> Final = new Stack<Integer>();
      Stack<Integer> temp = new Stack<Integer>();


      for (int i = 0; i < lenght; lenght--) {
         min = stack.peek();
         for (int j = 0; j < lenght; j++) {

            if(stack.isEmpty()){
               j = lenght;
               continue;
            }

            if (min > stack.peek())
               min = stack.peek();

            temp.push(stack.pop());
         }

         for (int j = 0; j < lenght; j++)
            if (min != (tempVar = temp.pop()))
               stack.push(tempVar);
             else
               Final.push(tempVar);
      }

   return Final;
   }
}
```

Output:

```
"C:\Program Files\Java\jdk-13.0.2\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\
Elements on stack before sorting: [32, 71, 6, 57, 74, 53, 18, 83, 39, 55]
Elements on stack after sorting: [6, 18, 32, 39, 53, 55, 57, 71, 74, 83]

Process finished with exit code 0
```

Q2) Delete a specific element from an stack.

Code:

```
class Question02{
    public static void main(String[] args) {
        Random rand = new Random();
        Stack input = new Stack();

        for (int i = 0; i < 5; i++) {
            input.push(rand.nextInt(100));
        }

        input = Question01.sorting(input);

        System.out.println("The Stack: "+input+" Stack Size: "+input.size());
        input = deleteSmallest(input);
        System.out.println("Updated stack: "+input+" Update Stack Size: "+input.size());

    }

    public static Stack deleteSmallest(Stack<Integer> stack) {
        int lenght = stack.size();
        int tempVar, min;

        Stack<Integer> temp = new Stack<Integer>();

        min = stack.peek();
        for (int j = 0; j < lenght; j++) {
            if (!(stack.isEmpty()) && min > stack.peek())
                min = stack.peek();

            temp.push(stack.pop());
        }

        for (int j = 0; j < lenght; j++)
            if (min != (tempVar = temp.pop()))
                stack.push(tempVar);

        return stack;
```

```
    }
}
```

Output:

```
"C:\Program Files\Java\jdk-13.0.2\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ
The Stack: [3, 10, 19, 36, 57, 63, 72, 79, 83, 88] Stack Size: 10
Updated stack: [10, 19, 36, 57, 63, 72, 79, 83, 88] Update Stack Size: 9

Process finished with exit code 0
```