Java Lab 8: Evaluation 2 - Set 1

Practice

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```
In [ ]: import java.lang.Math;
        import java.lang.StringBuilder;
```

1. Write a program to print all permutations of a String in Java. The string needs to be accepted from the user.

```
In [ ]: Scanner input = new Scanner(System.in);
        System.out.println("Enter string: ");
        String strIn = input.nextLine();
        System.out.println("Permutations of " + strIn);
        input.close();

        public static void permutation(String str, String ans)
            {
                if (str.length() == 0) {
                    System.out.println(ans + " ");
                    return;
                }

            for (int i = 0; i < str.length(); i++) {

                    char ch = str.charAt(i);

                    String sub = str.substring(0, i) +
                            str.substring(i + 1);

                    permutation(sub, ans + ch);
                }
            }

        permutation(strIn, "");
```

```
Enter string:
Permutations of tESt
tESt
tEtS
tSEt
tStE
ttES
ttSE
EtSt
EttS
EStt
EStt
EttS
EtSt
StEt
SttE
SEtt
SEtt
SttE
StEt
ttES
ttSE
tEtS
tESt
tStE
tSEt
```

2. Write a Java program to create and store integer values from 1 to 50.Now create 3 new sub arrays by finding the elements of the integer array that are divisible by 2,5 and 10 and display the elements of the 3 new arrays created

In [ ]:
```java
import java.util.ArrayList;
import java.util.Scanner;

int arr[] = new int[50];

for (int i=0; i<50; i++){
    arr[i] = i+1;
}

ArrayList<Integer> div2 = new ArrayList<Integer>();
ArrayList<Integer> div5 = new ArrayList<Integer>();
ArrayList<Integer> div10 = new ArrayList<Integer>();
```

```java
for (int i=0; i<50; i++){
    if (arr[i]%2==0){
        div2.add(arr[i]);
    }

    if (arr[i]%5==0){
        div5.add(arr[i]);
    }

    if (arr[i]%10==0){
        div10.add(arr[i]);
    }
}

System.out.println("Multiples of 2: ");
System.out.println(div2);

System.out.println("Multiples of 5: ");
System.out.println(div5);

System.out.println("Multiples of 10: ");
System.out.println(div10);
```

```
Multiples of 2:
[2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50]
Multiples of 5:
[5, 10, 15, 20, 25, 30, 35, 40, 45, 50]
Multiples of 10:
[10, 20, 30, 40, 50]
```

3. Write a java program that involves implementing inheritance with a base class Account having two attributes Account Number and Principal (double precision real number) and two derived classes Simple and Compound.

Write methods in the classes to calculate and display the respective Interest for Simple and Compound Accounts.

In [ ]:
```java
public static class Account {
    String AcctNo;
    float Principal;

    public void Print() {
```

```java
            System.out.println("From inside the Account");
            System.out.println("Account Number: " + this.AcctNo);
            System.out.println("Principal: " + this.Principal);
        }
    }

    public static class Simple extends Account {
        float iRate;
        int Period;
        double Interest;

        public Simple(float i, float p, String acct, int n) {
            this.iRate = i;
            this.AcctNo = acct;
            this.Principal = p;
            this.Period = n;

            this.Interest = this.iRate * this.Period * this.Principal / 100;
        }

        public void interest() {
            System.out.println("Simple interest: " + this.Interest);
        }
    }

    public static class Compound extends Account {
        float iRate;
        int Period;
        double Interest;

        public Compound(float i, float p, String acct, int n) {
            this.iRate = i;
            this.AcctNo = acct;
            this.Principal = p;
            this.Period = n;

            this.Interest = this.Principal * Math.pow((1 + this.iRate/100), this.Period);
        }

        public void interest() {
            System.out.println("Compound interest: " + (this.Interest - this.Principal));
        }
    }
}
```

```
In [ ]:  Simple s = new Simple(5, 1000, "ACT1", 10);
         Compound c = new Compound(5, 1000, "ACT2", 10);
```

```
In [ ]:  s.interest()
```

Simple interest: 500.0

```
In [ ]:  c.interest()
```

Compound interest: 628.8938870466548

```
In [ ]:  s.Print()
```

From inside the Account
Account Number: ACT1
Principal: 1000.0

```
In [ ]:
```