Exercice de compréhension  
La commande new

Voici le code d’une méthode créant des instances (objets) de la classe Fraction.

public static void main(String[] args)

{

Fraction f1;

f1 = new Fraction(0.75);

System.out.println("1: f1="+f1.toString());

Fraction f2 = new Fraction(4, 12);

System.out.println("2: f2="+f2.toString());

f1 = f2;

System.out.println("3: f1="+f1.toString()+" ,f2="+f2.toString());

f1.reduce();

System.out.println("4: f1="+f1.toString()+" ,f2="+f2.toString());

f2 = null;

System.out.println("5: f2="+f2.toString());

}

Complétez le tableau des variables suivant en dessinant les objets de la classe Fraction.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Programme |  | f1 | f2 |  | Objets |  | Affichage dans la console |
|  |  |  |  |  |  |  |  |
| public static void main(String[] args)  { |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Fraction f1; |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| f1 = new Fraction(0.75); |  |  |  |  |  |  |  |
| System.out.println("1: f1 = "+f1.toString()); |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Fraction f2 = new Fraction(4, 12); |  |  |  |  |  |  |  |
| System.out.println("2: f2 = "+f2.toString()); |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| f1 = f2; |  |  |  |  |  |  |  |
| System.out.println("3: f1 = "+f1.toString()+ |  |  |  |  |  |  |  |
| " ,f2 = "+f2.toString()); |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| f1.reduce(); |  |  |  |  |  |  |  |
| System.out.println("4: f1 = "+f1.toString())+ |  |  |  |  |  |  |  |
| " ,f2 = "+f2.toString()); |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| f2 = null; |  |  |  |  |  |  |  |
| System.out.println("5: f2 = "+f2.toString()); |  |  |  |  |  |  |  |

}

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Programme |  | f1 | f2 |  | Objets |  | Affichage dans la console |
|  |  |  |  |  |  |  |  |
| public static void main(String[] args)  { |  |  |  |  |  |  |  |
|  |  | n’existe pas | n’existe pas |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Fraction f1; |  | null | n’existe pas |  |  |  |  |
|  |  |  |  |  |  |  |  |
| f1 = new Fraction(0.75); |  |  | n’existe pas |  | numerator = 3 |  |  |
| System.out.println("1: f1 = "+f1.toString()); |  |  |  |  | denominator = 4 |  | **1: f1 = 3 / 4** |
|  |  |  |  |  |  |  |  |
| Fraction f2 = new Fraction(4, 12); |  |  |  |  | numerator = 3 |  |  |
| System.out.println("2: f2 = "+f2.toString()); |  |  |  |  | denominator = 4 |  | **2: f2 = 4 / 12** |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  | numerator = 4 |  |  |
|  |  |  |  |  | denominator = 12 |  | **Sera supprimé par le Garbage Collector** |
|  |  |  |  |  |  |  |  |
| f1 = f2; |  |  |  |  | numerator = 3 |  |  |
| System.out.println("3: f1 = "+f1.toString()+ |  |  |  |  | denominator = 4 |  | **3: f1 = 4 / 12, f2 = 4 / 12** |
| " ,f2 = "+f2.toString()); |  |  |  |  |  |  |  |
|  |  |  |  |  | numerator = 4 |  |  |
|  |  |  |  |  | denominator = 12 |  |  |
|  |  |  |  |  |  |  |  |
| f1.reduce(); |  |  |  |  | numerator = 1 |  | **4: f1 = 1 / 3, f2 = 1 / 3** |
| System.out.println("4: f1 = "+f1.toString())+ |  |  |  |  | denominator = 3 |  |  |
| " ,f2 = "+f2.toString()); |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| f2 = null; |  |  | null |  | numerator = 1 |  |  |
| System.out.println("5: f2 = "+f2.toString()); |  |  |  |  | denominator = 3 |  | **NullPointerException** |

}