

OBJECT ORIENTED PROGRAMMING PRACTICE WITH JAVA

HUỲNH CÔNG PHÁP, Assoc. Prof, PhD.

Table of Contents

Chapter 1. Introduction to Java and Eclipse	3
I. Exercises with solutions	4
II. Do it yourself	6
Chapter 2. Basic Object Oriented Programming Concepts	7
I. Exercises with solutions	8
II. Do it yourself	15
Chapter 3. Java fundamentals and control structures	17
I. Exercises with solutions	18
II. Do it yourself	21
Chapter 4. Java methods, arrays and references	25
I. Exercises with solutions	26
II. Do it yourself	32
Chapter 5. Implementation of Abstraction and Encapsulation	35
I. Exercises with solutions	36
II. Do it yourself	52
Chapter 6. Implementation of Inheritance and Polymorphism.....	55
I. Exercises with solutions	56
II. Do it yourself	73
Chapter 7. Exception Handling	75
I. Exercises with solutions	76
II. Do it yourself	76
Chapter 8. GUI programming with Java	77
I. Exercises with solutions	78
II. Do it yourself	78
Chapter 9. Java Database Connectivity	79
I. Exercises with solutions	80
II. Do it yourself	80

Chapter 1. Introduction to Java and Eclipse

I. Exercises with solutions

1. Install Eclipse

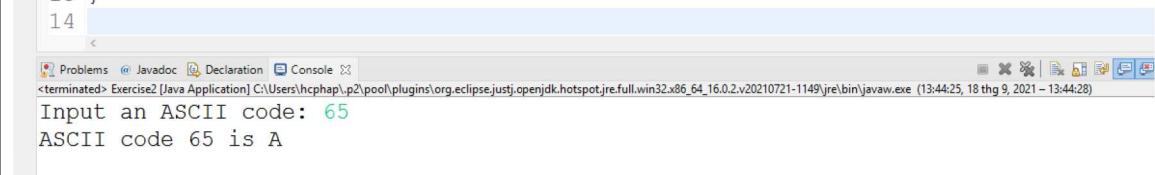
https://www.tutorialspoint.com/eclipse/eclipse_installation.htm

2. Write a java program printing out: “Hello VKU freshmen!”

```
1
2 public class DataPrinting {
3
4     public static void main(String[] args) {
5
6         System.out.println("Hello VKU freshmen");
7
8     }
9 }
```

3. Write a java application allowing user to input a byte number N ($32 \leq N \leq 255$) and printing out its corresponding character.

```
1 import java.util.*;
2
3 public class Exercise2 {
4     public static void main(String[] args) {
5
6         byte ASCIIcode;
7         Scanner keyboard = new Scanner(System.in);
8         System.out.print("Input an ASCII code: ");
9         ASCIIcode = keyboard.nextByte();
10        System.out.println("ASCII code " + ASCIIcode + " is " + (char)ASCIIcode)
11    }
12 }
13 }
```



The screenshot shows the Eclipse IDE interface with the Java code for Exercise2. The code reads a byte value from the user and prints its corresponding character. When run, it prompts the user to input an ASCII code (65), and then outputs "ASCII code 65 is A".

4. Write a java application allowing user to input a character and printing out its corresponding ASCII code.

```

1 import java.util.Scanner;
2 public class Exercise3 {
3     public static void main(String[] args) {
4         char ch;
5         Scanner keyboard = new Scanner(System.in);
6         System.out.print("Input a character: ");
7         ch = keyboard.next().charAt(0);
8         System.out.println("ASCII code of " + ch + " is " + (byte)ch);
9     }
10 }
    
```

Problems @ Javadoc Declaration Console
<terminated> Exercise3 [Java Application] C:\Users\hcphap\p2\pool\plugins\org.eclipse.jdt.org.eclipse.jdt.core\bin\java.exe (13:57:16, 10 thg 9, 2021 – 13:57:20)
Input a character: a
ASCII code of a is 97

5. Write a java application allowing user to input two integer numbers (a and b) then print out results of the following expressions: $a+b$; $a-b$; $a*b$; a/b ; $a \% b$

```

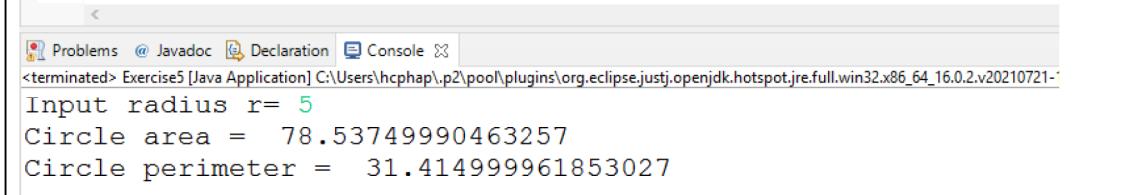
1 import java.util.*;
2 public class Exercise4 {
3     public static void main(String[] args) {
4         Scanner k=new Scanner(System.in);
5         System.out.println("Input two int numbers: ");
6         int a=k.nextInt();
7         int b=k.nextInt();
8         System.out.println(a+ " + " +b+" = "+(a+b));
9         System.out.println(a+ " - " +b+" = "+(a-b));
10        System.out.println(a+ " x " +b+" = "+a*b);
11        System.out.println(a+ " / " +b+" = "+a/b);
12        System.out.println(a+ " mod " +b+" = "+a%b);
13    }
14 }
    
```

Problems @ Javadoc Declaration Console
<terminated> Exercise4 [Java Application] C:\Users\hcphap\p2\pool\plugins\org.eclipse.jdt.org.eclipse.jdt.core\bin\java.exe (13:57:16, 10 thg 9, 2021 – 13:57:20)
Input two int numbers:
3
6
3 + 6 = 9
3 - 6 = -3
3 x 6 = 18
3 / 6 = 0
3 mod 6 = 3

6. Write a java program allowing user to input a circle radius and calculating the circle's area and perimeter.

```

1 import java.util.Scanner;
2 public class Exercise5 {
3
4     public static void main(String[] args) {
5         double r;
6         final float pi=3.1415f;
7         Scanner k=new Scanner(System.in);
8         System.out.print("Input radius r= ");
9         r=k.nextDouble();
10        System.out.println("Circle area = "+r*r*pi);
11        System.out.println("Circle perimeter = "+2*r*pi);
12    }
13 }
  
```


 A screenshot of the Eclipse IDE interface. The top part shows the Java code for Exercise5.java. The bottom part shows the 'Console' tab with the program's output: 'Input radius r= 5', 'Circle area = 78.53749990463257', and 'Circle perimeter = 31.414999961853027'.

II. Do it yourself

1. Write a java application allowing user to input a number (n) then print out results of the following expressions: $\sin(n)$, $\cos(n)$, \sqrt{n}

Hint: Use the Math class

2. Write a java application allowing user to input a string and printing out the number of characters of the given string.

Hint: Use the String class and length method

3. Write a java program allowing user to input width and high of a rectangle and calculating the rectangle's area and perimeter.

4. Explorer the online document

<https://www.codecademy.com/learn/learn-java>