

Exercises

1. Fill in the blanks in each of the following statements

My answers

- 1.1. White spaces
- 1.2. If statement
- 1.3. Division and modulus
- 1.4. Inner
- 1.5. Variable

2. Write Java statements that accomplish each of the following tasks

My answer

- 2.1. `System.out.print("Enter an integer");`
- 2.2. `Int a= b + c;`
- 2.3. `//program performs a sample payroll`

3. State whether each of the following is true or false. If false explain why

My answer

- 3.1. False Most java operators are evaluated left to right while a few are evaluated right to left
- 3.2. True
- 3.3. True
- 3.4. False h22 is valid while the rest are invalid

4. Assuming that $x = 2$ and $y = 3$, what does each of the following statements display?

My answer

- 4.1. $X = 2$
- 4.2. Value of $2 + 2$ is 4
- 4.3. Syntax error
- 4.4. $5 = 5$

5. Which of the following Java statements contain variables whose values are modified?

My answer

Statement 5.2

6. Given that $y = ax^3 + 7$, which of the following are correct Java statements for this equation?

My answer

Statements 6.1, 6.2, 6.4 and 6.5

7. State the order of evaluation of the operators in each of the following Java statements, and show the value of x after each statement is performed:

My answer

- 7.1. `*/+ -=`
`Int x=15;`
- 7.2. `%*/+ -=`
`Int x=0;`

7.3. */+**=

Int x=324;

8. Write an application that displays the numbers 1 to 4 on the same line, with each pair of adjacent numbers separated by one space. Use the following techniques
 - 8.1. Use one System.out.println statement
 - 8.2. Use four System.out.print statements
 - 8.3. Use one System.out.printf statement

My answer

```
//Exercise 2.14
//program displays number 1 to 4 adjacently

public class Exercise214
{
    //method main begins execution of Java program
    public static void main(String[] args)
    {
        //Using the println method
        System.out.println("1 2 3 4");

        //Using four print methods
        System.out.print("1 ");
        System.out.print("2 ");
        System.out.print("3 ");
        System.out.print("4 ");

        //using printf method
        System.out.printf("%n%s%n", "1 2 3 4");
    }
}
```

```
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C:\Users\RORI>cd/Users/RORI/Desktop/Learning Java/ch2/Exercises/Exercise2.14

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.14>java Exercise214
1 2 3 4
1 2 3 4
1 2 3 4

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.14>
```

9. (Arithmetic) Write an application that asks the user to enter two integers, obtains them from the user and prints their sum, product, difference and quotient (Division). Use the techniques shown in fig. 2.15

My answer

```

//Exercise 2.15
//Program inputs two inegers and displays sum, product, difference
//and quotient as results of the two integers

import java.util.Scanner;    //program uses class Scanner
public class Exercise215
{
    //method main begins execution of Java program
    public static void main(String[] args)
    {
        Scanner input=new Scanner(System.in);

        System.out.print("Enter first integer:");
        int number1=input.nextInt();

        System.out.print("Enter second integer:");
        int number2=input.nextInt();

        int sum=number1+number2;
        int difference=number1-number2;
        int product=number1*number2;
        int quotient=number1/number2;

        System.out.printf("Sum is %d\n",sum);
        System.out.printf("Difference is %d\n",difference);
        System.out.printf("Product is %d\n",product);
        System.out.printf("Quotient is %d\n",quotient);
    }
}

```

```

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C:\Users\RORI>cd/Users/RORI/Desktop/Learning Java/ch2/Exercises/Exercise2.15

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.15>java Exercise215
Enter first integer:10
Enter second integer:7
Sum is 17
Difference is 3
Product is 70
Quotient is 1

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.15>

```

10. (Comparing Integers) Write an application that asks the user to enter two integers, obtains them from the user and displays the larger number followed by the words "is larger". If the numbers are equal, print the message "These numbers are equal". Use the techniques shown in fig.2.15

My answer

```

//Exercise 2.16
//Program inputs two integers and compares them to see which one is
//the largest or if they are equal

import java.util.Scanner;    //program uses class Scanner

public class Exercise216
{
    //method main begins execution of Java application
    public static void main(String[] args)
    {
        Scanner input=new Scanner(System.in);

        System.out.print("Enter first integer:");
        int number1=input.nextInt();

        System.out.print("Enter second integer:");
        int number2=input.nextInt();

        if(number1>number2)
        {
            System.out.printf("%d is larger than %d\n",number1,number2);
        }

        if(number2>number1)
        {
            System.out.printf("%d is larger than %d\n",number2,number1);
        }

        if(number1==number2)
        {
            System.out.printf("%d and %d are equal\n",number1,number2);
        }
    }
}

```

```
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C:\Users\RORI>cd/Users/RORI/Desktop/Learning Java/ch2/Exercises/Exercise2.16

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.16>javac Exercise216.java

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.16>java Exercise216
Enter first integer:5
Enter second integer:4
5 is larger than 4

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.16>java Exercise216
Enter first integer:3
Enter second integer:8
8 is larger than 3

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.16>java Ecercise216
Error: Could not find or load main class Ecercise216

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.16>java Exercise216
Enter first integer:9
Enter second integer:9
9 and 9 are equal

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.16>
```

11. (Arithmetic, Smallest and Largest) Write an application that inputs three integers from the user and displays the sum, average, product, smallest and largest of the numbers. Use the techniques shown in fig 2.15
- My answer

```

//Exercise 2.17
//Program inputs three integers and outputs the sum, average, product,
//smallest and largest of the numbers

import java.util.Scanner;    //program uses class Scanner

public class Exercise217
{
    //method main begins execution of Java application
    public static void main(String[] args)
    {
        Scanner input=new Scanner(System.in);

        System.out.print("Enter first integer:");
        int number1=input.nextInt();

        System.out.print("Enter second integer:");
        int number2=input.nextInt();

        System.out.print("Enter third integer:");
        int number3=input.nextInt();

        int sum=number1+number2+number3;
        int average=(number1+number2+number3)/3;
        int product=number1*number2*number3;

        System.out.printf("Sum is %d\n",sum);
        System.out.printf("Average is %d\n",average);
        System.out.printf("Product is %d\n",product);
        //Smallest number
        if(number1<number2)
        {
            System.out.printf("Smallest number is %d\n",number1);
        }
    }
}

```

```
if(number1<number3)
{
    System.out.printf("Smallest number is %d\n",number1);
}

if(number2<number1)
{
    System.out.printf("Smallest number is %d\n",number2);
}

if(number2<number3)
{
    System.out.printf("Smallest number is %d\n",number2);
}

if(number3<number1)
{
    System.out.printf("Smallest number is %d\n",number3);
}

if(number3<number2)
{
    System.out.printf("Smallest number is %d\n",number3);
}

//largest number
if(number1>number2)
{
    System.out.printf("Largest number is %d\n",number1);
}

if(number1>number3)
{
    System.out.printf("Largest number is %d\n",number1);
}
```

```

        if(number2>number1)
        {
            System.out.printf("Largest number is %d\n",number2);
        }

        if(number2>number3)
        {
            System.out.printf("Largest number is %d\n",number2);
        }

        if(number3>number1)
        {
            System.out.printf("Largest number is %d\n",number3);
        }

        if(number3>number2)
        {
            System.out.printf("Largest number is %d\n",number3);
        }
    }
}

```

```

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C:\Users\RORI>cd/Users/RORI/Desktop/Learning Java/ch2/Exercises/Exercise2.17

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.17>java Exercise217.java
Error: Could not find or load main class Exercise217.java

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.17>java Exercise217
Enter first integer:3
Enter second integer:5
Enter third integer:7
Sum is 15
Average is 5
Product is 105
Smallest number is 3
Smallest number is 3
Smallest number is 5
Largest number is 5
Largest number is 7
Largest number is 7

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.17>

```

12. (Displaying Shapes with Asterisks) Write an application that displays a box, an oval, an arrow and a diamond using asterisks(*), as follows:


```

*****      ***      *      *
*      *      *      *      *      *
*      *      *      *      *      *
*      *      *      *      *      *
*      *      *      *      *      *
*      *      *      *      *      *
*      *      *      *      *      *
*      *      *      *      *      *
*****      ***      *      *

```

My answer

//Exercise 2.18

//Program displays a box, an oval, an arrow and a diamond using

//asterisks

```
public class Exercise218
```

```
{
```

```
    //method main begins execution of Java application
```

```
    public static void main(String[] args)
```

```
    {
```

```
        System.out.println(" *****      *****      *      *      ");
```

```
        System.out.println(" *      *      *      *      *****      *      *      ");
```

```
        System.out.println(" *      *      *      *      *****      *      *      ");
```

```
        System.out.println(" *      *      *      *      *      *      *      *      ");
```

```
        System.out.println(" *      *      *      *      *      *      *      *      ");
```

```
        System.out.println(" *      *      *      *      *      *      *      *      ");
```

```
        System.out.println(" *      *      *      *      *      *      *      *      ");
```

```
        System.out.println(" *      *      *      *      *      *      *      *      ");
```

```
        System.out.println(" *****      *****      *      *      ");
```

```
    }
```

```
}
```

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C:\Users\RORI>cd/Users/RORI/Desktop/Learning Java/ch2/Exercises/Exercise2.18

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.18>javac Exercise218.java

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.18>java Exercise218

```

*****      *****      *      *
*      *      *      *      *      *
*      *      *      *      *      *
*      *      *      *      *      *
*      *      *      *      *      *
*      *      *      *      *      *
*      *      *      *      *      *
*      *      *      *      *      *
*****      *****      *      *

```

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13. What does the following code print?

```
System.out.printf("%n**%n***%n****%n*****%n");
```

My answer

13.1. It prints a triangle

14. What does the following code print?

```
System.out.println("");  
System.out.println("****");  
System.out.println("*****");  
System.out.println("*****");  
System.out.println("****");
```

My answer

14.1. It prints a right acute triangle

15. What does the following code print?

```
System.out.print("");  
System.out.print("****");  
System.out.print("*****");  
System.out.print("*****");  
System.out.println("****");
```

My answer

15.1. It prints a straight line

16. What does the following code print?

```
System.out.print("");  
System.out.println("****");  
System.out.println("*****");  
System.out.print("*****");  
System.out.println("****");
```

My answer

16.1. A bar chart

17. What does the following code print?

```
System.out.printf("%s%n%s%n%s%n", "", "****", "
```

My answer

17.1. A bar chart

18. (Largest and Smallest Integers) Write an application that reads five integers and determines and prints the largest and smallest integers in the group. Use only the programming techniques you learned in this chapter.

My answer

```
//Exercise 2.24
//Program inputs five integers to compare which ones are the largest
//and which one sare the lowest

import java.util.Scanner;    //program uses class Scanner

public class Exercise224
{
    //method main begins execution in Java program
    public static void main(String[] args)
    {
        Scanner input=new Scanner(System.in);

        System.out.print("Enter first integer:");
        int number1=input.nextInt();

        System.out.print("Enter second integer:");
        int number2=input.nextInt();

        System.out.print("Enter third integer:");
        int number3=input.nextInt();

        System.out.print("Enter fourth integer:");
        int number4=input.nextInt();

        System.out.print("Enter fifth integer:");
        int number5=input.nextInt();

        //smallest integers for number 1
        if(number1<number2)
        {
            System.out.printf("Smallest is %d\n",number1);
        }
    }
}
```

```
if(number1<number3)
{
    System.out.printf("Smallest is %d\n",number1);
}

if(number1<number4)
{
    System.out.printf("Smallest is %d\n",number1);
}

if(number1<number5)
{
    System.out.printf("Smallest is %d\n",number1);
}

//smallest integers for number 2
if(number2<number1)
{
    System.out.printf("Smallest is %d\n",number2);
}

if(number2<number3)
{
    System.out.printf("Smallest is %d\n",number2);
}

if(number2<number4)
{
    System.out.printf("Smallest is %d\n",number2);
}

if(number2<number5)
{
    System.out.printf("Smallest is %d\n",number2);
}
```

```
//smallest integers for number 3
if(number3<number1)
{
    System.out.printf("Smallest is %d\n",number3);
}

if(number3<number2)
{
    System.out.printf("Smallest is %d\n",number3);
}

if(number3<number4)
{
    System.out.printf("Smallest is %d\n",number3);
}

if(number3<number5)
{
    System.out.printf("Smallest is %d\n",number3);
}

//smallest integers for number 4
if(number4<number1)
{
    System.out.printf("Smallest is %d\n",number4);
}

if(number4<number2)
{
    System.out.printf("Smallest is %d\n",number4);
}
```

```
if(number4<number3)
{
    System.out.printf("Smallest is %d\n",number4);
}

if(number4<number5)
{
    System.out.printf("Smallest is %d\n",number4);
}

//smallest integers for number 5
if(number5<number1)
{
    System.out.printf("Smallest is %d\n",number5);
}

if(number5<number2)
{
    System.out.printf("Smallest is %d\n",number5);
}

if(number5<number3)
{
    System.out.printf("Smallest is %d\n",number5);
}

if(number5<number4)
{
    System.out.printf("Smallest is %d\n",number5);
}
```

```
//largest integers for number 1
if(number1>number2)
{
    System.out.printf("Largest is %d\n",number1);
}

if(number1>number3)
{
    System.out.printf("Largest is %d\n",number1);
}

if(number1>number4)
{
    System.out.printf("Largest is %d\n",number1);
}

if(number1>number5)
{
    System.out.printf("Largest is %d\n",number1);
}

//largest integers for number 2
if(number2>number1)
{
    System.out.printf("Largest is %d\n",number2);
}

if(number2>number3)
{
    System.out.printf("Largest is %d\n",number2);
}

if(number2>number4)
{
    System.out.printf("Largest is %d\n",number2);
}
```

```
if(number2>number5)
{
    System.out.printf("Largest is %d\n",number2);
}

//largest integers for number 3
if(number3>number1)
{
    System.out.printf("Largest is %d\n",number3);
}

if(number3>number2)
{
    System.out.printf("Largest is %d\n",number3);
}

if(number3>number4)
{
    System.out.printf("Largest is %d\n",number3);
}

if(number3>number5)
{
    System.out.printf("Largest is %d\n",number3);
}

//largest integers for number 4
if(number4>number1)
{
    System.out.printf("Largest is %d\n",number4);
}
```



```

        if(number4>number2)
        {
            System.out.printf("Largest is %d\n",number4);
        }

        if(number4>number3)
        {
            System.out.printf("Largest is %d\n",number4);
        }

        if(number4>number5)
        {
            System.out.printf("Largest is %d\n",number4);
        }

        //largest integers for number 5
        if(number5>number1)
        {
            System.out.printf("Largest is %d\n",number5);
        }

        if(number5>number2)
        {
            System.out.printf("Largest is %d\n",number5);
        }

        if(number5>number3)
        {
            System.out.printf("Largest is %d\n",number5);
        }

        if(number5>number4)
        {
            System.out.printf("Largest is %d\n",number5);
        }
    }
}

```

```
C:\Users\RORI>cd/Users/RORI/Desktop/Learning Java/ch2/Exercises/Exercise2.24

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.24>java Exercise224
Enter first integer:2
Enter second integer:1
Enter third integer:4
Enter fourth integer:3
Enter fifth integer:8
Smallest is 2
Smallest is 2
Smallest is 2
Smallest is 1
Smallest is 1
Smallest is 1
Smallest is 1
Smallest is 4
Smallest is 3
Smallest is 3
Largest is 2
Largest is 4
Largest is 4
Largest is 4
Largest is 3
Largest is 3
Largest is 8
Largest is 8
Largest is 8
Largest is 8

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.24>
```

19. (Odd and Even) write an application that reads an integer and determines and prints whether it is odd or even. [hint: use the remainder operator. An even number multiplies by 2. Any multiple of two leaves a remainder of 0 when divided by 2]
My Answer

```

//Exercise 2.25
//Program inputs an integer and determines which is odd and which
//is even

import java.util.Scanner;    //Program uses class Scanner

public class Exercise225
{
    //method main begins execution of Java application
    public static void main(String[] args)
    {
        Scanner input=new Scanner(System.in);

        System.out.print("Enter an integer");
        int number=input.nextInt();

        if((number%2)==0)
        {
            System.out.println("number is even");
        }

        if((number%2)!=0)
        {
            System.out.println("number is odd");
        }
    }
}

```

```

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C:\Users\RORI>cd/Users/RORI/Desktop/Learning Java/ch2/Exercises/Exercise2.25

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.25>javac Exercise225.java

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.25>java Exercise225
Enter an integer1
number is odd

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.25>java Exercise225
Enter an integer6
number is even

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.25>

```

20. (Multiples) write an application that reads two integers, determines whether the first is a multiple of the second and prints the result. [hint: Use the remainder operator.]
My answer

```

//Exercise 2.26
//Program inputs two integers and determine whether one is a
//multiple of another

import java.util.Scanner; //program uses class Scanner

public class Exercise226
{
    //method main begins execution of Java application
    public static void main(String[] args)
    {
        Scanner input=new Scanner(System.in);

        System.out.print("Enter first integer:");
        int number1=input.nextInt();

        System.out.print("Enter second integer:");
        int number2=input.nextInt();

        if((number1%number2)==0)
        {
            System.out.printf("%d is a multiple of %d\n",number1,number2);
        }

        if((number1%number2)!=0)
        {
            System.out.printf("%d is not a multiple of %d\n",number1,number2);
        }
    }
}

```

```

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C:\Users\RORI>cd/Users/RORI/Desktop/Learning Java/ch2/Exercises/Exercise2.26

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.26>java Exercise226
Enter first integer:2
Enter second integer:4
2 is not a multiple of 4

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.26>java Exercise226
Enter first integer:4
Enter second integer:2
4 is a multiple of 2

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.26>

```

21. (Checkerboard Pattern of Asterisks) write an application that displays a checkerboard pattern, as follows:

```

*****
*****
*****
*****
*****
*****
*****
*****

```

My answer

```

//Exercise 2.27
//Program uses asterisks to show a checkerboard pattern

public class Exercise227
{
    //method main begins execution of Java application
    public static void main(String[] args)
    {
        System.out.println("*****");
        System.out.println("*****");
        System.out.println("*****");
        System.out.println("*****");
        System.out.println("*****");
        System.out.println("*****");
        System.out.println("*****");
        System.out.println("*****");
    }
}

```

```

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C:\Users\RORI>cd/Users/RORI/Desktop/Learning Java/ch2/Exercises/Exercise2.27

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.27>javac Exercise227.java

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.27>java Exercise227
*****
*****
*****
*****
*****
*****
*****
*****

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.27>

```

22. (Diameter, Circumference and Area of a circle) Here is a peek ahead. In this chapter, you learned about integers and the type `int`. java can also represent floating point numbers that contain decimal points, such as 3.14159. write an application that inputs from the user the radius of a circle as an integer and prints the circle's diameter, circumference and area using the floating point value 3.14159 for pie. Use the techniques shown in fig.2.7. [Note: You may also use the predefined constant `Math.PI` for the value of pie.

This constant is more precise than the value 3.14159. Class Math is defined in package java.lang. Classes in that package are imported automatically, so you do not need to import class Math to use it.] Use the following formulas (r is the radius, $\text{diameter} = 2r$, $\text{circumference} = 2\pi r$, $\text{area} = \pi r^2$). Do not store the results of each calculation in a variable. Rather, specify each calculation as the value that will be output in a System.out.printf statement. The values produced by the circumference and area calculations are floating point numbers. Such values can be output with the format specifier %f in a System.out.printf statement. You will learn more about floating point numbers in Chapter 3

My answer

```
//Exercise 2.28
//Program enters an integer and calculates the following
//1. The diameter of a circle
//2. The circumference of a circle
//3. The area of a circle

import java.util.Scanner; //program uses class Scanner

public class Exercise228
{
    //method main begins execution of Java application
    public static void main(String[] args)
    {
        Scanner input=new Scanner(System.in);

        System.out.print("Enter an integer");
        int number=input.nextInt();

        System.out.printf("Diameter is %d\n", (number*number));
        System.out.printf("Circumference is %f\n", (2*Math.PI*number));
        System.out.printf("Area is %f\n", (Math.PI*(number*number)));
    }
}
```

```
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C:\Users\RORI>cd/Users/RORI/Desktop/Learning Java/ch2/Exercises/Exercise2.28

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.28>javac Exercise228.java

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.28>java Exercise228
Enter an integer3
Diameter is 9
Circumference is 18.849556
Area is 28.274334

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.28>
```

23. (Integer Value of a Character) Here is another peak ahead. In this chapter you learned about integers and the type `int`. Java can also represent uppercase letters, lowercase letters and a considerable variety of special symbols. Every character has a corresponding integer representation. The set of characters a computer uses together with the corresponding integer representations for those characters is called that computer's character set. You can indicate a character value in a program simply by enclosing that character in single quotes, as in `'A'`.

You can determine a character's integer equivalent by preceding that character with `(int)`, as in

```
(int) 'A'
```

An operator of this form is called a cast operator (You will learn about cast operators in chapter 4.) The following statement outputs a character and its integer equivalent:

```
System.out.printf("The character %c has the val
```

When the preceding statement executes, it displays the character A and the value 65 (from the Unicode character set) as part of the string. The format specifier `%c` is a placeholder for a character (in this case, the character A).

Using statements similar to the one shown earlier in this exercise, write an application that displays the integer equivalents of some uppercase letters, lowercase letters, digits and special symbols. Display the integer equivalents of the following: `ABcabc012$*+ /` and the blank character

My answer

```

//Exercise 2.29
//Program inputs a character and outputs an integer representation
//of a character

public class Exercise229
{
    //method main begins execution of Java application
    public static void main(String[] args)
    {
        System.out.printf("Integer representing %c is %d\n",'A',((int)'A'));
        System.out.printf("Integer representing %c is %d\n",'B',((int)'B'));
        System.out.printf("Integer representing %c is %d\n",'C',((int)'C'));
        System.out.printf("Integer representing %c is %d\n",'a',((int)'a'));
        System.out.printf("Integer representing %c is %d\n",'b',((int)'b'));
        System.out.printf("Integer representing %c is %d\n",'c',((int)'c'));
        System.out.printf("Integer representing %c is %d\n",'0',((int)'0'));
        System.out.printf("Integer representing %c is %d\n",'1',((int)'1'));
        System.out.printf("Integer representing %c is %d\n",'2',((int)'2'));
        System.out.printf("Integer representing %c is %d\n",'$',((int)'$'));
        System.out.printf("Integer representing %c is %d\n",'*',((int)'*'));
        System.out.printf("Integer representing %c is %d\n",'+',((int)'+'));
        System.out.printf("Integer representing %c is %d\n",'/',((int)'/'));
    }
}

```

```

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C:\Users\RORI>cd/Users/RORI/Desktop/Learning Java/ch2/Exercises/Exercise2.29

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.29>javac Exercise229.java

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.29>java Exercise229
Integer representing A is 65
Integer representing B is 66
Integer representing C is 67
Integer representing a is 97
Integer representing b is 98
Integer representing c is 99
Integer representing 0 is 48
Integer representing 1 is 49
Integer representing 2 is 50
Integer representing $ is 36
Integer representing * is 42
Integer representing + is 43
Integer representing / is 47

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.29>

```

24. (Separating the Digits in an Integer) write an application that inputs one number consisting of five digits from the user, separates the number into its individual digits and prints the digits separated from one another by three spaces each. For example, if the user types in the number 42339 the program should print



Assume that the user enters the correct number of digits. What happens when you enter a number with more than five digits? What happens when you enter a number with fewer than five digits? [Hint: It is possible to do this exercise with the techniques you learned in this chapter. You will use both division and remainder to “pick off” each digit]

My answer

```
//Exercise 2.30
//Program inputs an integer and separates it by three spaces

import java.util.Scanner;    //program uses class Scanner

public class Exercise230
{
    //method main begins execution of Java application
    public static void main(String[] args)
    {
        Scanner input=new Scanner(System.in);

        System.out.print("Enter an integer:");
        int number=input.nextInt();

        int number1=number/10000;
        int number2=(number/1000)%10;
        int number3=(number/100)%10;
        int number4=(number/10)%10;
        int number5=number%10;

        if(number>100000)
        {
            System.out.println("digits are more than 5");
        }

        if(number<10000)
        {
            System.out.println("digits are less than 5");
        }

        System.out.printf("%d  %d  %d  %d  %d",number1,number2,number3,number4,number5);
    }
}
```

```

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C:\Users\RORI>cd/Users/RORI/Desktop/Learning Java/ch2/Exercises/Exercise2.30

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.30>java Exercise230
Enter an integer:1234
digits are less than 5
0  1  2  3  4
C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.30>java Exercise230
Enter an integer:123456
digits are more than 5
12  3  4  5  6
C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.30>java Exercise230
Enter an integer:12345
1  2  3  4  5
C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.30>

```

25. (Table of Squares and Cubes) Using only the programming techniques you learned in this chapter, write an application that calculates the squares and cubes of the number from 0 to 10 and prints the resulting values in table format, as shown below.

number	square	cube
0	0	0
1	1	1
2	4	8
3	9	27
4	16	64
5	25	125
6	36	216
7	49	343
8	64	512
9	81	729
10	100	1000

My answer

```
//Exercise 2.31
//Program calculates square roots and cube roots of the number from
//0 to 10
```

```
public class Exercise231
{
    //method main begins execution of Java application
    public static void main(String[] args)
    {
        System.out.println("number square cube");
        System.out.printf("%d      %d      %d %n", 0, (0*0), (0*0*0));
        System.out.printf("%d      %d      %d %n", 1, (1*1), (1*1*1));
        System.out.printf("%d      %d      %d %n", 2, (2*2), (2*2*2));
        System.out.printf("%d      %d      %d %n", 3, (3*3), (3*3*3));
        System.out.printf("%d      %d      %d %n", 4, (4*4), (4*4*4));
        System.out.printf("%d      %d      %d %n", 5, (5*5), (5*5*5));
        System.out.printf("%d      %d      %d %n", 6, (6*6), (6*6*6));
        System.out.printf("%d      %d      %d %n", 7, (7*7), (7*7*7));
        System.out.printf("%d      %d      %d %n", 8, (8*8), (8*8*8));
        System.out.printf("%d      %d      %d %n", 9, (9*9), (9*9*9));
        System.out.printf("%d      %d      %d %n", 10, (10*10), (10*10*10));
    }
}
```

```
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C:\Users\RORI>cd/Users/RORI/Desktop/Learning Java/ch2/Exercises/Exercise2.31

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.31>javac Exercise231.java

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.31>java Exercise231
number square cube
0      0      0
1      1      1
2      4      8
3      9      27
4      16     64
5      25     125
6      36     216
7      49     343
8      64     512
9      81     729
10     100    1000

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.31>
```

26. (Negative, Positive and Zero Values) Write a program that inputs five numbers and determines and prints the number of negative numbers input, the number of positive numbers input and the number of zeros input.

My answer

```
//Exercise 2.32
//Program inputs five integers and determines which ones are negative,
//positive or zero

import java.util.Scanner;    //program uses class scanner

public class Exercise232
{
    //method main begins execution of Java application
    public static void main(String[] args)
    {
        Scanner input=new Scanner(System.in);

        System.out.print("Enter first integer");
        int number1=input.nextInt();

        System.out.print("Enter second integer");
        int number2=input.nextInt();

        System.out.print("Enter third integer");
        int number3=input.nextInt();

        System.out.print("Enter fourth integer");
        int number4=input.nextInt();

        System.out.print("Enter fifth integer");
        int number5=input.nextInt();

        //number 1 determinations
        if(number1<0)
        {
            System.out.printf("%d is a negative number %n",number1);
        }
    }
}
```

```
if(number1>0)
{
    System.out.printf("%d is a positive number %n",number1);
}

if(number1==0)
{
    System.out.printf("%d is a negative zero %n",number1);
}

//number 2 deternimations
if(number2<0)
{
    System.out.printf("%d is a negative number %n",number2);
}

if(number2>0)
{
    System.out.printf("%d is a positive number %n",number2);
}

if(number2==0)
{
    System.out.printf("%d is a negative zero %n",number2);
}

//number 3 deternimations
if(number3<0)
{
    System.out.printf("%d is a negative number %n",number3);
}

if(number3>0)
{
    System.out.printf("%d is a positive number %n",number3);
}
```

```
if(number3==0)
{
    System.out.printf("%d is a negative zero %n",number3);
}

//number 4 deternimations
if(number4<0)
{
    System.out.printf("%d is a negative number %n",number4);
}

if(number4>0)
{
    System.out.printf("%d is a positive number %n",number4);
}

if(number4==0)
{
    System.out.printf("%d is a negative zero %n",number4);
}

//number 5 deternimations
if(number5<0)
{
    System.out.printf("%d is a negative number %n",number5);
}

if(number5>0)
{
    System.out.printf("%d is a positive number %n",number5);
}

if(number5==0)
{
    System.out.printf("%d is a negative zero %n",number5);
}
```

```
)
```

```
}
```

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C:\Users\RORI>cd/Users/RORI/Desktop/Learning Java/ch2/Exercises/Exercise2.32

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.32>javac Exercise232.java

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.32>java Exercise232

Enter first integer7

Enter second integer-2

Enter third integer0

Enter fourth integer9

Enter fifth integer-4

7 is a positive number

-2 is a negative number

0 is a negative zero

9 is a positive number

-4 is a negative number

C:\Users\RORI\Desktop\Learning Java\ch2\Exercises\Exercise2.32>