

# CN4001/ CD4001

## Software Development

### Topic 4: Making Choices

#### Part 1




# Module Study Guide

Topic 4	
Subject	<b>Making Choices</b>
Aims	To look at the use of <b>if</b> and <b>if else</b> statements to make <b>choices</b> in Java programs.  To look at the use of <b>nested if else</b> statements and the <b>switch</b> statement to make <b>multiple choices</b> in Java programs
Prepare	Recorded Lecture, on-line Q&A, Charatan and Kans, chapter 3
LAB	Two <b>tutor directed assessed</b> exercises in writing a Java program that makes choices ( <b>4 marks – 2 marks each</b> )

# Developing a Shopping Application





```
*** Product Price Check ***  
Enter initial price: 1000  
Enter tax rate: 12.5  
Cost after tax = 1125.0
```

**RUN**

```
import java.util.*;

public class ShoppingApp
{
    public static void main(String[] args )
    {
        double initialPrice, tax, total;
        Scanner sc = new Scanner(System.in);
        System.out.println("*** Product Price Check ***");
        System.out.print("Enter initial price: ");
        initialPrice = sc.nextDouble();
        System.out.print("Enter tax rate: ");
        tax = sc.nextDouble();
        total = initialPrice * (1 + tax/100);
        System.out.println("Cost after tax = " + total);
    }
}
```

**Default order of  
executing instructions is  
in **sequence**.**

```
import java.util.*;

public class ShoppingApp
{
    public static void main(String[] args )
    {
        double initialPrice, tax, total;
        Scanner sc = new Scanner(System.in);
        System.out.println("*** Product Price Check ***");
        System.out.print("Enter initial price: ");
        initialPrice = sc.nextDouble();
        System.out.print("Enter tax rate: ");
        tax = sc.nextDouble();
        total = initialPrice * (1 + tax/100);
        System.out.println("Cost after tax = " + total);
    }
}
```

```
import java.util.*;

public class Shoppi
{
    public static void main(String[] args )
    {
        double initialPrice, tax, total;
        Scanner sc = new Scanner(System.in);
        System.out.println("*** Product Price Check ***");
        System.out.print("Enter initial price: ");
        initialPrice = sc.nextDouble();
        System.out.print("Enter tax rate: ");
        tax = sc.nextDouble();
        total = initialPrice * (1 + tax/100);
        System.out.println("Cost after tax = " + total);
    }
}
```

From the **first**...

```

import java.util.*;

public class ShoppingApp
{
    public static void main(String[] args )
    {
        double initialPrice, tax, total;
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter initial price: ");
        System.out.print("Enter tax rate: ");
        initialPrice = sc.nextDouble();
        System.out.print("Enter tax rate: ");
        tax = sc.nextDouble();
        total = initialPrice * (1 + tax/100);
        System.out.println("Cost after tax = " + total);
    }
}

```

... to the last.



```
import java.util.*;

public class ShoppingApp
{
    public static void main
    {
        double initialPrice;
        Scanner sc = new Scanner(System.in);
        System.out.println("*** Product Price Check ***");
        System.out.print("Enter initial price: ");
        initialPrice = sc.nextDouble();
        System.out.print("Enter tax rate: ");
        tax = sc.nextDouble();
        total = initialPrice * (1 + tax/100);
        System.out.println("Cost after tax = " + total);
    }
}
```

.. and with **every instruction** being executed..

```

import java.util.*;

public class ShoppingApp
{
    public static void main(String[] args)
    {
        double initialPrice, tax;
        Scanner sc = new Scanner(System.in);
        System.out.println("***");
        System.out.print("Enter initial price: ");
        initialPrice = sc.nextDouble();
        System.out.print("Enter tax rate: ");
        tax = sc.nextDouble();
        total = initialPrice * (1 + tax/100);
        System.out.println("Cost after tax = " + total);
    }
}

```

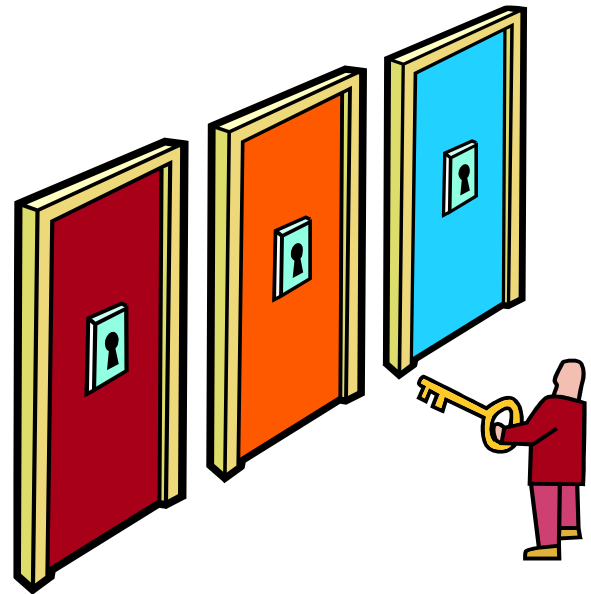
But lets assume we want to **halve the tax** if the initial price is more than **100**

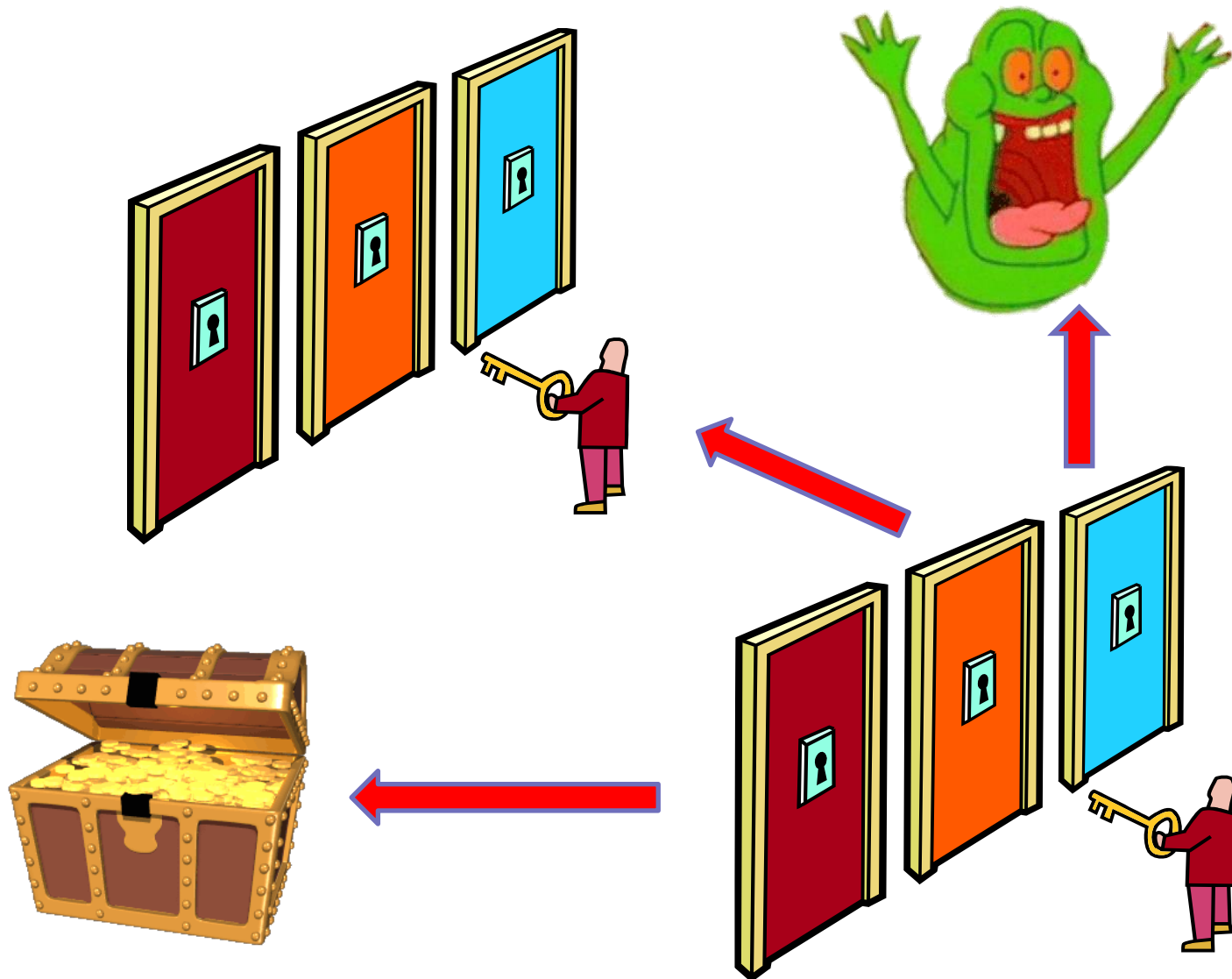
```
import java.util.*;

public class ShoppingApp
{
    public static void main(
    {
        double initialPrice,
        Scanner sc = new Sca
        System.out.println("
        System.out.print("En
        initialPrice = sc.ne
        System.out.print("Ent
        tax = sc.nextDouble();
        total = initialPrice * (1 + tax/100);
        System.out.println("Cost after tax = " + total);
    }
}
```

We don't **always** want the program to halve the **tax** – so we want the program to make a **choice** here.

# **Selection** allows us to make choices





# Selection in Java

**if** statement

**if...else** statement

**switch** statement

