King Saud University
College of Computer & Information Science
CSC111 – Lab05
Loops
All Sections

Objectives:

Student should learn how to:

1- Follow the loop design strategy to develop loops.

2- Control a loop with a sentinel value.

3- Write loops using for statements

4- Write nested loops

5- Combine loops and control statements to solve problems with complex logic

Lab Exercise 1

Write a java program to run a gaming store. The program manages the store inventory, sells games to customers, and print their bills. Every game has a price. The user can add games to the store and sell games to customers. The program must compute and print the total bill for the customer. A customer can buy as many games as he wants but must not exceed the number of games in the store. Each customer is entitled to a 25% discount if he buys more than 2 games.

Your program should display a menu with three options: add games, sell games and exit as shown below:

```
************************************************************
*                Welcome to Gaming Center :)               *
*                ---------------------------               *
*     Please enter one of the following options:           *
*     1) Add  ==> this allows you to add a game to inventory *
*     2) Sell  ==> this allows you to sell games to a customer *
*     3) Exit ==> to end this program                      *
*                                                          *
************************************************************
```

- If the user chooses **Add** then he will be able to add new games to inventory. When adding a game, the user needs to provide the game price only. Adding ends when the user enters -1 as the price.
- If the user chooses **Sell** then program should start reading the sold games prices one after another until the user enter -1 as the price. The program should then print the total bill. You must make sure that a customer cannot buy more games than what is in the store. Also, you should make sure the discount is applied (if any) before printing the bill.
- If the user chooses **Exit**. Your program should print "Goodbye" and exit.

When the program starts, the number of games in the store is zero. The user must add games before he starts selling. If the user attempts to sell games with zero inventory the program must print an appropriate message.

(**Note**: at this stage you do not have to match prices when selling and adding since you need *arrays* for this.)

Name your class **GameStore**.

Note: Unlike primitive data types like **int** and **double**, to compare two **String** variables **s1** and **s2** use **s1.equals(s2)** or **s1.equalsIgnoreCase(s2)**. Do NOT use **s1 == s2.**
Here is a sample run to show different cases:

Sample Run

```
**********************************************************************
*                 Welcome to Gaming Center :)                        *
*                 ---------------------------------                  *
*     Please enter one of the following options:                     *
*     1) Add ==> this allows you to add a game to inventory          *
*     2) Sell ==> this allows you to sell games to a customer        *
*     3) Exit ==> to end this program                                *
*                                                                    *
**********************************************************************
Enter your option :> sell ↲
Sorry. There are no more games in the store :(
**********************************************************************
*                 Welcome to Gaming Center :)                        *
*                 ---------------------------------                  *
*     Please enter one of the following options:                     *
*     1) Add ==> this allows you to add a game to inventory          *
*     2) Sell ==> this allows you to sell games to a customer        *
*     3) Exit ==> to end this program                                *
```

```
*                                                                    *
**********************************************************************
Enter your option :> add ↲
Please enter game price (-1 to end):  200 ↲
Please enter game price (-1 to end):  300 ↲
Please enter game price (-1 to end):  450 ↲
Please enter game price (-1 to end):  250 ↲
Please enter game price (-1 to end):  100 ↲
Please enter game price (-1 to end):  -1 ↲
**********************************************************************
*                Welcome to Gaming Center :)                         *
*                ---------------------------                         *
*     Please enter one of the following options:                     *
*     1) Add ==> this allows you to add a game to inventory          *
*     2) Sell ==> this allows you to sell games to a customer        *
*     3) Exit ==> to end this program                                *
*                                                                    *
**********************************************************************
Enter your option :> sell ↲
Please, enter game price (-1 to end):  200 ↲
Please, enter game price (-1 to end):  200 ↲
Please, enter game price (-1 to end):  -1 ↲
Total price before discount: 400.0 SR
Your discount is: 0.0 SR
Total price after discount: 400.0 SR
**********************************************************************
*                Welcome to Gaming Center :)                         *
*                ---------------------------                         *
*     Please enter one of the following options:                     *
*     1) Add ==> this allows you to add a game to inventory          *
*     2) Sell ==> this allows you to sell games to a customer        *
*     3) Exit ==> to end this program                                *
*                                                                    *
**********************************************************************
Enter your option :> add ↲
Please enter game price (-1 to end):  100 ↲
Please enter game price (-1 to end):  2000 ↲
Please enter game price (-1 to end):  150 ↲
Please enter game price (-1 to end):  -1 ↲
**********************************************************************
*                Welcome to Gaming Center :)                         *
*                ---------------------------                         *
*     Please enter one of the following options:                     *
*     1) Add ==> this allows you to add a game to inventory          *
*     2) Sell ==> this allows you to sell games to a customer        *
*     3) Exit ==> to end this program                                *
*                                                                    *
**********************************************************************
Enter your option :> sell ↲
Please, enter game price (-1 to end):  300 ↲
Please, enter game price (-1 to end):  300 ↲
Please, enter game price (-1 to end):  350 ↲
Please, enter game price (-1 to end):  600 ↲
Please, enter game price (-1 to end):  500 ↲
Please, enter game price (-1 to end):  300 ↲
Can not sell more games. Out of stock :(
```

```
Total price before discount: 2350.0 SR
Your discount is: 587.5 SR
Total price after discount: 1762.5 SR
**************************************************************************
*                  Welcome to Gaming Center :)                           *
*                  ---------------------------------                     *
*      Please enter one of the following options:                        *
*      1) Add ==> this allows you to add a game to inventory             *
*      2) Sell ==> this allows you to sell games to a customer           *
*      3) Exit ==> to end this program                                   *
*                                                                        *
**************************************************************************
Enter your option :> sell ↲
Sorry. There are no more games in the store :(
**************************************************************************
*                  Welcome to Gaming Center :)                           *
*                  ---------------------------------                     *
*      Please enter one of the following options:                        *
*      1) Add ==> this allows you to add a game to inventory             *
*      2) Sell ==> this allows you to sell games to a customer           *
*      3) Exit ==> to end this program                                   *
*                                                                        *
**************************************************************************
Enter your option :> exit ↲
Thanks Goodbye !
```

Solution

1- Use project **lab05**

2- Create a new class and name it **GameStore**. Make sure you choose the `public static void main` option.

3- When you are done, save your program and run it. Make sure it prints the output as shown above.

Done…

```
import java.util.Scanner;
public class GameStoreWhile {
public static void main(String[] args) {
		Scanner input = new Scanner(System.in);
		String option;
		int numberOfGames=0;
		System.out.println("*************************************************************************");
		System.out.println("*                  Welcome to Gaming Center :)                          *");
		System.out.println("*                  --------------------------                           *");
		System.out.println("*     Please enter one of the following options:                        *");
		System.out.println("*     1) Add  ==> this allows you to add a game to inventory            *");
		System.out.println("*     2) Sell ==> this allows you to sell games to a customer           *");
		System.out.println("*     3) Exit ==> to end this program                                   *");
		System.out.println("*                                                                       *");
		System.out.println("*************************************************************************");
		option = input.next();
		while (!option.equalsIgnoreCase("exit")) {
		if (option.equalsIgnoreCase("add"))
		{
			System.out.print("Please enter game price (-1 to end):  ");
			double price = input.nextDouble();
			while (price!=-1)
			{
				numberOfGames++;
				System.out.print("Please enter game price (-1 to end):  ");
				price = input.nextDouble();
			}
		}
		else if (option.equalsIgnoreCase("sell"))
			if (numberOfGames==0)
				System.out.println("Sorry. There are no more games in the store :(");
			else
			{
				double total=0;
				int count=0;
				System.out.print("Please, enter game price (-1 to end):  ");
				double price = input.nextDouble();
				while (price != -1 && numberOfGames > 0 )
				{
					total = total + price;
					numberOfGames--;
					count++;
					if (numberOfGames==0)
					System.out.println("Can not sell more games. Out of stock :(");
					else {  System.out.print("Please enter game price (-1 to end):  ");
							price = input.nextDouble();
						}
				}
				double discount;
				if (count > 2 )   discount = 0.25 * total;
				else discount = 0;
				System.out.println("Total price before discount: "+total+"SR");
				System.out.println("Your discount is: "+discount+"SR");
				total = total - discount;
				System.out.println("Total price after discount: "+total+"SR");
			}
```

```
            System.out.println("*************************************************************************");
            System.out.println("*                  Welcome to Gaming Center :)                          *");
            System.out.println("*                  --------------------------                           *");
            System.out.println("*      Please enter one of the following options:                        *");
            System.out.println("*      1) Add  ==> this allows you to add a game to inventory            *");
            System.out.println("*      2) Sell ==> this allows you to sell games to a customer           *");
            System.out.println("*      3) Exit ==> to end this program                                   *");
            System.out.println("*                                                                        *");
            System.out.println("*************************************************************************");
            System.out.print("Enter your option :> ");
            option = input.next();

            }
            System.out.println("Thanks Goodbye !");
            input.close();
        }

}
```