

Java module 2

Exercises Day 4

1 Queue	Printing queue
Instructions	<p>Implement a queue to manage printing tasks. Each task has a name. Simulate adding tasks to the queue and then processing them in order.</p> <p>The program should allow the user to enter a task, to print the next task or to print all tasks</p>
Expected output	<p>Would you like to (a) enter a task, (b) print a task (c) print all tasks or (d) exit?</p> <p>>>> a</p> <p>Enter the task name:</p> <p>>>> Document-abc.pdf</p> <p>Task added to the queue.</p> <p>Would you like to (a) enter a task, (b) print a task (c) print all tasks or (d) exit?</p> <p>>>> a</p> <p>Enter the task name:</p> <p>>>> my_photo.jpg</p> <p>Task added to the queue</p> <p>Would you like to (a) enter a task, (b) print a task (c) print all tasks or (d) exit?</p> <p>>>> b</p> <p>Printing Document-abc.pdf</p> <p>Would you like to (a) enter a task, (b) print a task (c) print all tasks or (d) exit?</p> <p>>>> a</p> <p>Enter the task name:</p> <p>>>> another_photo.jpg</p> <p>Task added to the queue</p> <p>Would you like to (a) enter a task, (b) print a task (c) print all tasks or (d) exit?</p> <p>>>> c</p> <p>Printing my_photo.jpg</p> <p>Printing another_photo.jpg</p> <p>Would you like to (a) enter a task, (b) print a task (c) print all tasks or (d) exit?</p> <p>>>> d</p> <p>Good bye!</p>
Solution	<pre>import java.util.LinkedList; import java.util.Queue; import java.util.Scanner;</pre>

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public class Ex1 {
    public static void main (String[] args) {

        Scanner scanner = new Scanner(System.in);

        Queue<String> myPrintingQueue = new LinkedList<>();

        String option = "";
        while (!option.equals("d")) {
            System.out.print("Would you like to (a) enter a
task, (b) print a task, (c) print all tasks or (d) exit?
");
            option = scanner.nextLine();
            switch (option) {
                case "a":
                    System.out.print("Enter the task name:
");

                    String taskName = scanner.nextLine();
                    myPrintingQueue.add(taskName);
                    System.out.print("The task was
added.");
                    break;
                case "b":
                    if (!myPrintingQueue.isEmpty()) {
                        System.out.println("Printing... " +
myPrintingQueue.remove());
                    } else {
                        System.out.println("The queue was
empty.");
                    }
                    break;
                case "c":
                    while(!myPrintingQueue.isEmpty()) {
                        System.out.println("Printing... " +
myPrintingQueue.remove());
                    }
                    break;
                default:
                    break;
            }
        }
    }
}

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	<pre> scanner.close(); } }</pre>
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2 Stack	Reverse a String
Instructions	<p>Use a stack to reverse a string. Push each character of the string onto the stack and then pop them off to get the reversed string.</p> <p>The program should request a String from the user and then print the reversed String.</p>
Expected output	<p>Enter a sentence: >>> Hello World! The reversed sentence is: !dlroW olleH</p>
Solution	<pre> import java.util.Scanner; import java.util.Stack; public class Ex2 { public static void main (String[] args) { //Read the sentence from the input Scanner scanner = new Scanner(System.in); System.out.print("Enter a sentence: "); String sentence = scanner.nextLine(); //Create a stack to store the sentence char by char Stack<Character> sentenceStack = new Stack<>(); //Push the characters into the stack for (int i = 0; i < sentence.length(); i++) { sentenceStack.push(sentence.charAt(i)); } System.out.print("The reversed sentence is: "); //Pop the characters from the stack and print them while (!sentenceStack.isEmpty()){ System.out.print(sentenceStack.pop()); } } }</pre>

	<pre> scanner.close(); } }</pre>
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3 LinkedList	Playlist
Instructions	<p>Create a playlist using a linked list. Add three songs to the playlist, then remove the first song and display the remaining list.</p> <p>The program should allow the user to add songs to the playlist, to remove a song of his choice and to view the full list.</p>
Expected output	<p>Would you like to (a) add a song, (b) remove a song, (c) see the playlist or (d) exit?</p> <p>>>> a</p> <p>Enter the song name:</p> <p>>>> Viva la vida</p> <p>Song added!</p> <p>Would you like to (a) add a song, (b) remove a song, (c) see the playlist or (d) exit?</p> <p>>>> a</p> <p>Enter the song name:</p> <p>>>> Adventure of a lifetime</p> <p>Song added!</p> <p>Would you like to (a) add a song, (b) remove a song, (c) see the playlist or (d) exit?</p> <p>>>> a</p> <p>Enter the song name:</p> <p>>>> A sky full of stars</p> <p>Song added!</p> <p>Would you like to (a) add a song, (b) remove a song, (c) see the playlist or (d) exit?</p> <p>>>> b</p> <p>Which song would you like to remove? Enter a number from 0 to 2:</p> <p>>>> 1</p> <p>Song in position 1 removed!</p> <p>Would you like to (a) add a song, (b) remove a song, (c) see the playlist or (d) exit?</p> <p>>>> c</p> <p>Playlist:</p> <p>Viva la vida</p> <p>A sky full of stars</p> <p>Would you like to (a) add a song, (b) remove a song, (c) see the playlist or (d) exit?</p> <p>>>> d</p> <p>Good bye!</p>
Solution	<pre> import java.util.Scanner; import java.util.List; import java.util.LinkedList;</pre>

```

public class Ex3 {
    public static void main (String[] args) {

        Scanner scanner = new Scanner(System.in);

        //LinkedList to store the playlist
        List<String> playlist = new LinkedList<>();

        String option = "";
        while (!option.equals("d")) {
            System.out.print("Would you like to (a) add a
song, (b) remove a song, (c) see the playlist or (d) exit?
");
            option = scanner.nextLine();
            switch(option) {
                case "a":
                    //Add a song
                    System.out.println("Enter the song
name: ");

                    String songName = scanner.nextLine();
                    playlist.add(songName);
                    System.out.println("Song added!");
                    break;
                case "b":
                    //Remove a song
                    System.out.println("Which song would
you like to remove? Enter a number from 0 to " +
(playlist.size() - 1));
                    int songIndex = scanner.nextInt();
                    scanner.nextLine();
                    playlist.remove(songIndex);
                    System.out.println("Song in position "
+ songIndex + " removed.");
                    break;
                case "c":
                    //See the playlist
                    System.out.println("Playlist:");
                    for (String song : playlist) {
                        System.out.println(song);
                    }
                    break;
            }
        }
    }
}

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        case "d":
            System.out.println("Goodbye!");
            break;
        default:
            break;
    }
}
scanner.close();
}
```