

Practical session 5

This work should be completed before the next lecture.

Task 1: Comparing DVD objects

Copy your NetBeans project from Task 3 of Week 3.

In the `DVD` class, add an integer field called `id`, with a get method.

Delete all statements from the `main()` method of the application, and any methods in the same class that are called from `main()`.

Like we did in the lecture demonstration, create multiple collections of `DVD` objects using:

- `Array`
- `ArrayList`
- `Sorted ArrayList` in natural order (number of stars, then title, then lead actor)
- `Sorted ArrayList` in lead actor order (lead actor, then title, then number of stars)
- `HashMap` (use the DVD's `id` as the key)
- `TreeMap` (use the DVD's `id` as the key)
- `TreeSet` in natural order (number of stars, then title, then lead actor)
- `TreeSet` in title order (title, then lead actor, then number of stars)

Print the contents of each collection.

Portfolio requirements:

- The NetBeans project for this completed task

Task 2: Using the `ArrayDeque` class

Copy your NetBeans project from Task 1.

Add to the application class an `ArrayDeque` collection of `DVD` objects. Using iterators, output its contents, first from front to back, and then from back to front.

Portfolio requirements:

- The NetBeans project for this completed task

Task 3: A generic Stack class

In a new NetBeans project, write a generic `Stack` class. The methods for a stack are:

- `void push(T item)`
adds `item` to the top of the stack
- `T pop()`
removes the top `item` from the stack and returns it
- `boolean isEmpty()`
returns `true` if there are no items in the stack, and `false` otherwise

Make two versions of the `Stack` class:

1. Use an `ArrayList` to hold the items
2. Use an `ArrayDeque` to hold the items

In the `main()` method of the application:

- Create a `String` version, a `Person` version, and a `DVD` version of both `Stack` classes
- Push three items to each stack and make four attempts to pop an item from each stack
- Ensure the output to the console shows all push and pop attempts and reports all errors

Portfolio requirements:

- The NetBeans project for this completed task