CISC 3115 TY2

Exercises for Java Interfaces

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Exercises

- EX1. implementing the improved Animal class hierarchy with interfaces

- Ex2: revise the SortingArrays in the lecture to sort an ArrayList instead of an array

- Ex3. revise the SortShapeCollections in the lecture, and sort a list of Circles according their areas

- Ex4. revise the SortShapeCollections, and sort a list of Shapes according their areas

- Ex5. revise the sample code AnimalKingdomEnhanced, and to find the heaviest animal from a collection and an array of animals without using the sort method

- Ex6: revise the sample code AnimalKingdomEnhanced, and to sort animals in descending order according their weight in both descending and ascending orders

- See next set of slides for more details

Ex1. Animal Class Hierarchy with Interfaces

- Your task is to implement the improved Animal class hierarchy with interfaces

  - Create a directory for this exercise

  - Based on the lecture nodes, implement the class hierarchy and interfaces

    - Including FlyingCat class, implementing the generic methods discussed

Ex2: Sorting ArrayList

- Your task is to revise SortingArrays to sort an ArrayList instead of an array

  - Create a directory for this exercise

  - Download the SortingArrays on Blackboard to the directory

  - Revise the code to store the objects in ArrayList's instead of arrays and sort the ArrayList's

Ex3: Sorting Circles

- Your task is to revise SortShapeCollections, and sort a list of Circles according their areas

    - Create a directory for this exercise

    - Download the SortShapeCollections on Blackboard to the directory

    - Create and write a Circle class

    - Revise the code to sort a few <u>circles</u> in an ArrayList

Ex4: Sorting Shapes

- Your task is to revise SortShapeCollections, and sort a list of Circles according their areas

    - Create a directory for this exercise

    - Download the SortShapeCollections on Blackboard to the directory

    - Create and write a Circle class

    - Revise the code to sort a few <u>shapes</u> including <u>a few circles and a few rectangles</u> in an ArrayList (Hint: what data type should the ArrayList store?)

Ex5. Heaviest Animal

- Your task is to revise the code you written for ex1, and to find the heaviest animal from a collection and an array of animals without using the sort method

    - Create a directory for this exercise

    - Copy your solution in ex1 to the directory

    - Write a generic method called findTheHeavist that takes an ArrayList of animals, and return the heaviest animal

    - Revise the AnimalApp class, and create an ArrayList of animals, and displays the heaviest animal.

Ex6. Sorting Animals in Descending Order

- Your task is to revise the code you written for ex1, and to sort animals in descending order according their weight.

  - Create a directory for this exercise

  - Copy your solution in ex1 to the directory

  - Write a AnimalComparatorDescend class that implements the <u>Comparator</u> interface to be used to sort the animals according their weights in the <u>descending order</u>

  - Write a AnimalComparatorAscend class that implements the <u>Comparator</u> interface to be used to sort the animals according their weights in the <u>ascending order</u>

  - Revise the AnimalApp class, and create an ArrayList of animals, sort the animals, and displays the sorted animals in both descending and ascending orders