WIA 1002 Data Structure

Lab Test 1

Time: 1 hour

Scenario

The airport data analytics department plans to gather information about flights and respective passengers for future analytics. Your superior immediately requests to develop an in-house program to address the specified objectives – and you, being a newly hired programmer in the department, is tasked to develop the program using Java, based on the following details.

List of Tasks

1. Create a class called `Account` that should serve as the main entry point for passengers and cabin crew information. The class should contain the `user_id`, `name`, `email` and `contact_number`. The `user_id`, `email` and `contact_number` for cabin crews can be null.
2. Create a new `Airline` class to store information about a particular airline. The `airline_name` and `flight_number`, together with passengers and cabin crew information, should all be included.
3. Create a generic `Item` class that takes two parameters as input. It should store an item and its price.
4. Create a `Flight` class that inherits from the `Airline` class. In the `Flight` class, create two variables, `flight` and `meal`, using the `Item` class.
    a. The constructor should contain the additional `flight` and `meal` variable in addition to the constructor from its parent class.
    b. Override the `compareTo()` method to compare the number of cabin crew on another flight.
5. Create an `Airport` class that contains the `main` method.
    a. Within the `main` method, create a new `Flight` object for each flight information given below.
    b. Create a generic method `max` to return the most expensive flight ticket based on the data given.

Dataset

1. Airline: ANA – All Nippon Airways
   Flight Number: NH804
   Passenger: 1001, Amy, amy@gmail.com, 012-9887765
   Flight: Economy, RM3932

Meal: Deep Fried Chicken Don, RM25
Cabin Crew: Joan, Daniel, Matt

2. Airline: Singapore Airlines
   Flight Number: SQ103
   Passenger: 1002, Jessica, jessica@gmail.com, 019-2562398
   Flight: Economy, RM5476
   Meal: Sandwiches, RM12
   Cabin Crew: Myra, Lawrence

3. Airline: Malaysia Airlines
   Flight Number: MH104
   Passenger: 1003, Brandon, brandon@gmail.com, 018-3234546
   Flight: Business, RM14210
   Meal: Chinese Roasted Duck with Rice, RM39
   Cabin Crew: Fred, Emily, Kendrick, Olivia

To test the program:

1. Print all the airlines and their passenger information.
2. Determine which airline has the most cabin crew between ANA and Malaysia Airlines.
3. Based on the airline ticket price, determine the most expensive ticket using the generic `max` method.

Expected output

```
Airline Name: ANA - All Nippon Airways
Flight Number: NH804
Passenger Info:
User ID: 1001
Name: Amy
Email: amy@gmail.com
Contact Num: 012-9887765
[Item Name: Economy
Item Price: RM3932]
[Item Name: Deep Fried Chicken Don
Item Price: RM25]

Airline Name: Singapore Airlines
Flight Number: SQ103
Passenger Info:
User ID: 1002
Name: Jessica
Email: jessica@gmail.com
Contact Num: 019-2562398
[Item Name: Economy
Item Price: RM5476]
```

[Item Name: Egg Sandwiches
Item Price: RM13]

Airline Name: Malaysia Airlines
Flight Number: MH104
Passenger Info:
User ID: 1003
Name: Brandon
Email: brandon@gmail.com
Contact Num: 018-3234546
[Item Name: Business
Item Price: RM14210]
[Item Name: Chinese Roasted Duck with Rice
Item Price: RM39]

Flight Malaysia Airlines has a larger cabin crew than Flight ANA.
The most expensive flight ticket is RM 14210