

## Python Programming –Final Term Exam

### ESS 112 - Programming I

#### International Institute of Information Technology – Bangalore

#### Problem 4

Marks: 6

##### Problem Description:

The train booking system is a simulation of the real-world train reservation process. It is designed to allow users to book seats on different trains and to keep track of the number of available and booked seats on each train as well as to provide information about different trains such as the departure and arrival times the stations they stop at and the classes of service available.

The program is implemented using object-oriented programming concepts in Python and consists of several classes: **Train Ticket Passenger**

The **Train** class represents a train. The **Train** class has the following properties:

- **trainNumber**: a unique identifier for the train
- **trainName**: the name of the train
- **numberOfSeats**: the total number of seats available on the train
- **bookedSeats**: the number of seats that have been booked on the train
- **price**: Cost of booking a seat in a train

The **Train** class also has the following methods:

- **bookSeat**: a method that allows a user to book a specified number of seats on the train for a passenger. This method updates the **bookedSeats** property of the **Train** object and returns a **Ticket** object.
- **availableSeats**: a method that returns the number of available seats on the train
- **display**: a method that displays information about the train

The **Ticket** class represents a ticket. The **Ticket** class has the following properties:

- **passenger**: a **Passenger** object that represents the passenger who has booked the ticket
- **numberOfSeats**: the number of seats booked on the train

The **Ticket** class also has the **display** method that displays information about the ticket.

The **Passenger** class represents a passenger and has the following properties:

- **name**: the name of the passenger
- **age**: the age of the passenger

Finally the **TrainBookingSystem** class is the main class that ties everything together. In this class an array of **Train** objects is created and a menu-based interface is provided to the user

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to book tickets on different trains view information about the trains and view information about the tickets they have booked.

#### Sample Input:

```
1
1001
Rajdhani
100
2000
3
2
1001
2
Ram 20 Shyam 30
4
```

#### Sample Output:

```
Train created
Train details:
Train Number: 1001
Train Name: Rajdhani
Seat Available: 100
Cost: 2000
Ticket booked
```

#### Note:

Each set of input lines starts with one of the integers below and the following lines contain the data relevant for that choice:

**1. Create a train:**

Followed by train number, train name, seat available and cost.

Prints out "Train Created" as in Sample Output

**2. Book a ticket:**

Followed by train number, no. of seats passenger, name and age.

Prints out "Ticket Booked" as in Sample Output

**3. Display trains**

Prints out "Train Details" followed by the different fields as in the Sample Output"

**4. Exit**