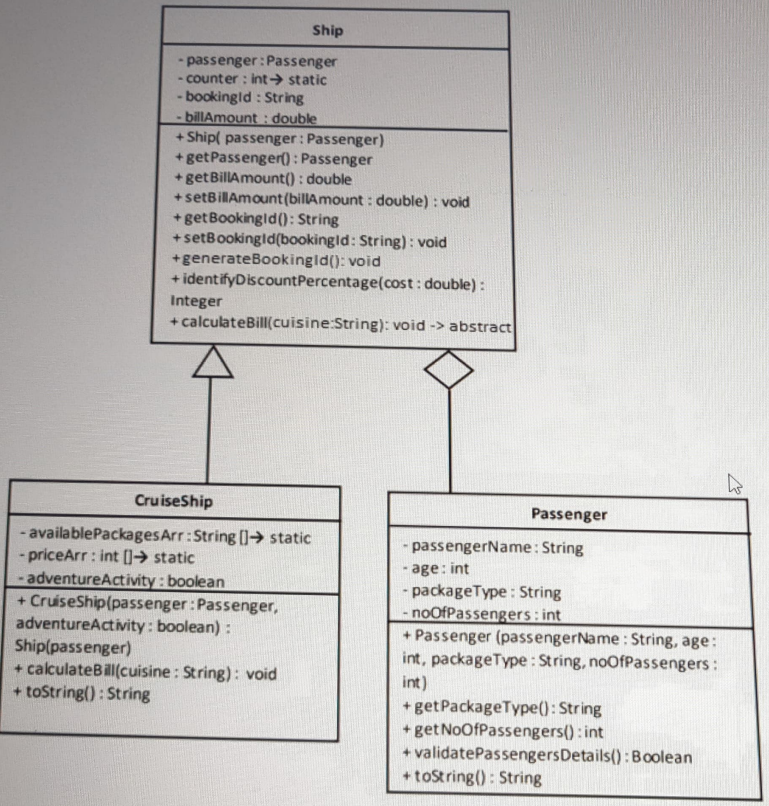
Class Diagram:



Notes:

- Do not include any extra instance/static variables and instance/static methods in the given classes
- Case-sensitive comparison is to be done if not explicitly mentioned

Notes:

- *Do not include any extra instance/static variables and instance/static methods in the given classes*
- ***Case-sensitive** comparison is to be done if not explicitly mentioned*
- *Do not change any value or case of the given variables*
- *Read notes and examples for better understanding of the logic*
- *In the derived classes, the order of passing arguments to the constructor would be base class variables followed by derived class variables*

Implementation Details:

Class Name	Implementation Details
Passenger	Partially Implemented
Ship	Partially Implemented
CruiseShip	Partially Implemented

Ship class:

identifyDiscountPercentage(*cost*):

- This method calculates and returns *discountPercentage*(Integer) based on the below table:

cost	*discountPercentage*
Greater than or equal to 50000.0 and less than or equal to 80000.0	10
Greater than 80000.0	15
Other values	0

Example: If *cost* is 325000.0 currency, then *discountPercentage* would be 15

generateBookingId():

- This method auto-generates and sets the **bookingId** (String)

Example: *If cost is 325000.0 currency, then discountPercentage would be 15*

generateBookingId():

- *This method auto-generates and sets the* **bookingId** (String)
- *The* **bookingId** *must start with the first character of* **packageType** (String) in uppercase followed by auto-generated value starting from 1001
- *The auto-generated value would be incremented by one for the next* **bookingId**
- *Use static variable* **counter** *appropriately to implement the auto-generation logic*

Example: *If the* **packageType** *is "***srilanka***" then the first* **bookingId** would be "**S1001**" and second **bookingId** would be "**G1002**" if the **packageType** is "**Goa**"

Passenger class:

validatePassengersDetails()

- *This method validates* **passengerName** (String) and **age** (int) and returns a Boolean value based on the below logic:
- *Check if the length of* **passengerName** is greater than 3 and **age** is greater than or equal to 18
  - *If yes, then return* **true**
- *Otherwise, return* **false**

Example: If the **passengerName** is "Henry" and **age** is 20, then this method would return **true**

CruiseShip class:

availablePackagesArr:

- *This is a static array* (String[]) which contains *packageType*(String) as its elements
- The initial value of the **availablePackagesArr** is given below:

availablePackagesArr	{"Srilanka", "Chennai", "Goa"}

Note:

- This array is supplied. Hence no need to code
- Do not change **CASE** of elements in the array

availablePackagesArr	{ "Srilanka", "Chennai", "Goa" }

Note:

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- *This array is supplied. Hence no need to code*
- *Do not change* ***CASE*** *of elements in the array*

priceArr:

- *This is a static array (int []) which contains price(int) as its elements*
- *This array has one-to-one correspondence with the* ***availablePackagesArr***
- *The initial value of* ***priceArr*** *is given below:*

priceArr	{65000,25000,30000}

Note: *This array is supplied. Hence no need to code*

calculateBill(*cuisine*):

- *This method accepts cuisine(String)as parameter, calculates and sets the* **billAmount**(double) and generates the **bookingId** (String) based on the below logic:
- *Invoke the* **validatePassengersDetails**() method of **Passenger** class
- *If the above method returns* **false**, set **bookingId** to "**NA**" in uppercase and the **billAmount** to **-1.0**
- Otherwise,
  - Check if the **packageType** (String) of **Passenger** class is present as one of the elements in **availablePackagesArr.** If present, then set *price*(int) with the corresponding value from **priceArr.** Otherwise set price to -1
    Note: Perform **case-insensitive** comparison
  - If *price* is -1, then set **bookingId** to "**NA**" in uppercase and the **billAmount** to **-1.0**
  - Otherwise,
    - Check if the **noOfPassengers** (int) of **Passenger** class is between 1 and 10 (both inclusive). If not then, set **bookingId** to "**NA**" in uppercase and the **billAmount** to **-1.0**
    - Otherwise,
      - Calculate *totalCost*(int) as product of *price* and **noOfPassengers**
      - Set the value of *discount*(int) by invoking **identifyDiscountPercentage()** method of **Ship** class by passing the above calculated *totalCost* as parameter
      - Identify *finalCost*(double) by applying the above obtained *discount* on *totalCost*
      - Calculate extra amount based on *cuisine*. If the *cuisine* is "italian", then add 100 currency to *finalCost*. Otherwise, if the *cuisine* is "chinese", then add 130 currency to *finalCost*
        Note: Perform **case-insensitive** comparison for *cuisine*
      - If **adventureActivity** (boolean) value is **true**, add 1200 currency to the above calculated *finalCost*

- *This is a static array (int []) which contains price(int) as its elements*
- *This array has one-to-one correspondence with the* **availablePackagesArr**
- *The initial value of* **priceArr** *is given below:*

priceArr	{65000,25000,30000}

Note: *This array is supplied. Hence no need to code*

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calculateBill(*cuisine***):**

- *This method accepts cuisine(String)as parameter, calculates and sets the* **billAmount**(double) and generates the **bookingId** (String) based on the below logic:
- *Invoke the* **validatePassengersDetails**() *method of* **Passenger** *class*
- *If the above method returns* **false**, *set* **bookingId** to "**NA**" *in uppercase and the* **billAmount** to **-1.0**
- *Otherwise,*
  - *Check if the* **packageType** *(String) of* **Passenger** *class is present as one of the elements in* **availablePackagesArr.** If present, then set *price*(int) with the corresponding value from **priceArr.** Otherwise set *price* to -1
    Note: *Perform* **case-insensitive** *comparison*
  - *If price is -1, then set* **bookingId** to "**NA**" *in uppercase and the* **billAmount** to **-1.0**
  - *Otherwise,*
    - *Check if the* **noOfPassengers** *(int) of* **Passenger** *class is* between 1 and 10 (both inclusive). If not then, set **bookingId** to "**NA**" in uppercase and the **billAmount** to **-1.0**
    - *Otherwise,*
      - *Calculate totalCost*(int) as product of *price* and **noOfPassengers**
      - *Set the value of discount*(int) by invoking **identifyDiscountPercentage()** method of **Ship** class by passing the above calculated *totalCost* as parameter
      - *Identify finalCost*(double) by applying the above obtained *discount* on *totalCost*
      - *Calculate extra amount based on cuisine. If the cuisine* is "italian", then add 100 currency to *finalCost*. Otherwise, if the *cuisine* is "chinese", then add 130 currency to *final*Cost
        Note: *Perform* **case-insensitive** *comparison for cuisine*
      - *If* **adventureActivity** *(boolean) value is* **true**, add 1200 currency to the above calculated *finalCost*
      - *Set the* **billAmount** *with the above calculated finalCost*
      - *Generate* **bookingId** *by invoking the* **generateBookingId**() *method of* **Ship** *class*

Assumption: *The valid values for cuisine are "italian" and "chinese". Only valid values would be passed*

Note: *No need to validate the assumption*

Example: *If* **passengerName** *is "Henry",* **age** *is 20,* **packageType** *is "srilanka",* **noOfPassengers** *is 5,* **adventureActivity** *is* **true** *and cuisine is "chiNese" then* **billAmount** would be **277580.0** currency and **bookingId** would be "**S100**
(considering it to be the first id)

WISH YOU ALL THE BEST