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# Algorithm

1. Initialization of the Program

Declaring the instances of Class Hotel and RoomType

**Hotel[] HotelArr = new Hotel[4];**

**RoomType [] RoomTyp=new RoomType [11];**

As per the given requirements the HotelArr is initialized using the constructors aand also the RoomTyp is initialized using the constructor:

**HotelArr[0] = new Hotel("El Grando","Lakeside Drive, San Diego",3,3)**

**RoomTyp[0] = new RoomType("Executive studio", 210, 210, 2, 20, 17)**

Now after the instances are initialized the Hotel will be allotted the RoomTyp they have using the setRoomType(Obj) method and passing the RoomTyp as the parameters.

**HotelArr[0].setRoomType(RoomTyp[0])**

1. Main Menu Options

**MAIN MENU**

**Please select an option from the menu:**

**1. Display all hotels**

**2. Find cheapest room**

**3. Set a sale price**

**4. Find rooms matching criteria**

**5. Exit System**

1. Choosing the Option 1, the user will be displayed the list of Hotels with the Rooms Types available in it. The details such as the Star Ratings, Room Price, Room Type and Maximum Occupancy is displayed.

**LOOP 0 TO 3**

**PRINT HotelArr[h].getName()**

**LOOP 0 TO HotelArr[h].getStarRating()**

**PRINT "\*"**

**LOOP 0 TO RoomTyp.length**

**PRINT "Room Type: " HotelArr[h].getRoomType(t).getName());**

**PRINT "Maximum occupancy: HotelArr[h].getRoomType(t).getMaximumOccupancy()**

**PRINT "Regular price: "+HotelArr[h].getRoomType(t).getRegularPrice()**

**END LOOP**

1. The Second option is about finding the Cheapest Rate of the Room available among all the Hotels. For this we will traverse through the whole Array of the Room Types and the associations we build at the initialization.

**PRINT " The cheapest rate available in any hotel is at "**

**INTEGER LowestSale=1800;**

**INTEGER LowestHotel=0,LowestRoom=0;**

**LOOP 0 TO 3**

**LOOP 0 TO HotelArr[h].getNumRoomTypes()**

**IF [HotelArr[h].Rooms[r].GET\_SALEPrice()<=LowestSale ]**

**LowestSale=HotelArr[h].Rooms[r].GET\_SALEPrice();**

**LowestHotel=h;**

**LowestRoom=r;**

**END IF**

**PRINT HotelArr[LowestHotel].getName()**

**PRINT” Room Type: HotelArr[LowestHotel].getRoomType(LowestRoom).getName()**

**PRINT" Maximum occupancy: HotelArr[LowestHotel].getRoomType(LowestRoom).getMaximumOccupancy()**

**PRINT" Regular price: HotelArr[LowestHotel].getRoomType(LowestRoom).getRegularPrice()**

**PRINT" Sale price: HotelArr[LowestHotel].getRoomType(LowestRoom).GET\_SALEPrice()**

1. When the user selects the Third option, the user will be able to Set his/her own sale price for the Hotel Room. The Sale price can be set between 50% to 100% of the given Price.

**PRINT " Setting a Sale price"**

**STRING NameOfHotel**

**INTEGER NumOfHotel=-1;**

**DO WHILE [NumOfHotel==-1]**

**PRINT" Enter the name of the hotel:");**

**INPUT NameOfHotel**

**LOOP 0 TO 3**

**IF [NameOfHotel == HotelArr[i].getName()]**

**NumOfHotel=i;**

**END LOOP**

**END DO**

**PRINT " Room Types available: "**

**INTEGER type=0**

**DO WHILE**

**LOOP 0 TO HotelArr[NumOfHotel].getNumRoomTypes()**

**PRINT " (h+1) HotelArr[NumOfHotel].Rooms[h].getName()**

**END`LOOP**

**PRINT" Select Room Type: "**

**INPUT type**

**IF [type>=0 && type<=HotelArr[NumOfHotel].getNumRoomTypes()]**

**break;**

**END IF**

**INTEGER GET\_SALE = HotelArr[NumOfHotel].getRoomType(type).getSalePrice();**

**PRINT " Room type: HotelArr[NumOfHotel].getRoomType(type).getName()**

**PRINT" Maximum occupancy: HotelArr[NumOfHotel].getRoomType(type).getMaximumOccupancy()**

**PRINT" Sale price $" GET\_SALE**

**PRINT" Enter a Sale Price:"**

**INTEGER SET\_SALE**

**INPUT SET\_SALE**

**IF [SET\_SALE>=(SET\_SALE\*0.5) && SET\_SALE<=(SET\_SALE)]**

**HotelArr[NumOfHotel].getRoomType(type).setSalePrice(SET\_SALE)**

**PRINT" Update Sale Price is: HotelArr[NumOfHotel].getRoomType(type).getSalePrice()**

**ELSE**

**PRINT "The Sale Price should be between SET\_SALE\*0.5 and SET\_SALE “**

1. Query Based search is being provided in the 4th option, where the user will be able to search the hotel rooms according to the requirements of the user. There are 3 constraints which are used for the searching: Minimum Star Ratings, Minimum Occupancy and Maximum Price User is ready to Pay.

**PRINT "Please enter the criteria which you require. “**

**PRINT “Minimum occupancy required: “**

**INTEGER Occupancy**

**INPUT Occupancy**

**PRINT "Minimum star rating required: "**

**INTEGER Star\_Ratings**

**INPUT Star\_Ratings**

**PRINT"Maximum daily price you are willing to pay:"**

**INTEGER Room\_Price**

**INPUT Room\_Price**

**INTEGER Occupancy\_avail,Ratings\_avail,Price\_avail**

**PRINT " Results maching the criteria:”**

**LOOP 0 TO 4**

**LOOP 0 TO HotelArr[i].numRoomTypes**

**Occupancy\_avail = HotelArr[i].Rooms[j].getMaximumOccupancy()**

**Price\_avail = HotelArr[i].Rooms[j].GET\_SALEPrice()**

**Ratings\_avail = HotelArr[i].getStarRating()**

**IF [Occupancy\_avail>=Occupancy && Price\_avail<=Room\_Price && Ratings\_avail>=Star\_Ratings]**

**PRINT HotelArr[i].getName()**

**LOOP 0 TO RoomTyp.length**

**PRINT "Room Type: HotelArr[i].getRoomType(t).getName())”**

**PRINT"MaximumOccupancy: HotelArr[i].getRoomType(t).getMaximumOccupancy()**

**PRINT"\nSale Price: HotelArr[i].getRoomType(t).GET\_SALEPrice()”**

**END LOOP**

**END LOOP**

1. Last option is for exiting the program.

**EXIT**

# Test Cases

|  |  |  |  |
| --- | --- | --- | --- |
| Test Case | Expected Result | Actual Result | Screenshots |
| Options to be selected | Select the correct option | Performing the correct operation |  |
| Room Types of the Hotels | List out all the Hotels and the Room types defined details | All the Hotels were displayed |  |
| Cheapest Available Room | Hotel name, Stars, Room Type, Occupancy and least sale price | Hotel Name displayed with stars and the Occupancy and Sale Price |  |
| Dynamically Searching for the Cheapest Hotel Room | Hotel name, Stars, Room Type, Occupancy and least sale price | Hotel Name displayed with stars and the Occupancy and Sale Price as per the updated value |  |
| Setting value between 50% and 100% of the Regular Price | Unable to validate the amount entered | Failed to verify the Sale price for |  |
| Setting value between 50% and 100% of the Regular Price | Able to validate the amount entered | Successful to verify the Sale price for |  |
| Query Based Search | Matching the criteria all the rooms should be displayed | List displayed of according to the criteria |  |
| EXIT | Close the Program | Program Closed Successfully |  |