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IT 114-452

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Programming Assignment 1

**IT 114 – Advanced Programming for Information Technology**

**Case Studies**

1. **Formulating the Problem** 
   1. **Problem Description**

Create a program that will allow the user/receptionist to track appointments through their stylists’ schedule and book appointments for their clients as well as their client’s information. Furthermore, the system should also hold 32 days worth of data for each stylist with up to 10 stylists. The data entered (for the client) should include their name, date and time of appointment, service required, and the cost of those services.

* 1. **Verbalization**

What is the goal?

Create an array with 10 stylists, a method that holds all in the user information for the clients. Return the information, also ask the user for a specific stylist, or just print all of them in the array.

What are the givens?

The givens include the data that I need to have for the client which is the client’s first and last name, date and time of appointment, service required and the cost of those services. Moreover, the information for the client array is also given. I must have no more than 10 slots in my array for each stylist and their respective client.

What are the unknowns?

The unknowns are the client data (that has to be entered by the user through I/O), stylist data (first and last name), if the client would like to print the data collected for a specific stylist or everyone in the salon.

* 1. **Information Elicitation**

Goal

Create an array with 10 stylists, a method that holds all in the user information for the clients. Return the information, also ask the user for a specific stylist, or just print all of them in the array.

Givens

The givens include the data that I need to have for the client which is the client’s first and last name, date and time of appointment, service required and the cost of those services. Moreover, the information for the client array is also given. I must have no more than 10 slots in my array for each stylist and their respective client.

Unknowns

The unknowns are the client data (that has to be entered by the user through I/O), stylist data (first and last name), if the client would like to print the data collected for a specific stylist or everyone in the salon.

Conditions

None

1. **Planning the Solution**
   1. **Solution Strategy**

Get the data for clients from the user, the data for stylists from the user. Ask the client whether they want a specific stylist for their appointment, or just to print all of them in the salon. Print all of the information.

* 1. **Goal Decomposition**

**Sub-goal 1**

Get client information from the user.

**Sub-goal 2**

Make sure there are dummy stylists in the program to give the client something to choose from.

**Sub-goal 3**

Include the clients data into stylist array “Client[] schedule”. Make sure that there is enough space in the array up to one month (31 days).

**Sub-goal 4**

Make sure to put existing stylists into stylists array “Stylist[] arrStylists”. Make sure there are max 10 spots for stylists.

**Sub-goal 5**

Ask user (client) if they want to choose from existing stylist or input a new one into the system (assuming it is not there). Therefore, I must print all the stylists in the array before the client chooses.

**Sub-goal 6**

If they client wants to add a stylist that Is not in the system, I must first create a variable to hold that stylists name and then add them into the array “Stylist[] arrStylists”.

* 1. **Resources**

No formula used in my program other than data inputted (via keyboard) from the user. If anything, my “formula” would consist of data entered from the user for the client information.

* 1. **Data Organization and Description**

Input (This is not given. This is data that is manually inputted from the user) Below is an **example** of what It would look like when you put in the client information.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Description | Origin | Used in Sub-goal # |
| Michael | First name of client | User | 1 |
| Scott | Last name of client | User | 1 |
| 12:00 | Time of appointment | User | 1 |
| 2/19/21 | Date of appointment | User | 1 |
| Haircut | Type of service | User | 1 |
| 35.95 | Cost of service | User | 1 |

Input also consists of the user being asked whether they want to pick a specific stylist or just add their information to the entire array of stylists listed.

1. **Designing the Solution**
   1. **Structure Chart**

Goal Refinement

**Sub-goal 1**

Get client information from user

**Sub-goal 1.1**

Input client first and last name

**Sub-goal 1.2**

Input clients date and time of appointment

**Sub-goal 1.3**

Input client service required

**Sub-goal 1.4**

Input client cost of service

**Sub-goal 2**

Make sure there are dummy stylists in the program to give the client something to choose from.

**Sub-goal 3**

Include the clients data into stylist array “Client[] schedule”. Make sure that there is enough space in the array up to one month (31 days).

**Sub-goal 3.1**

Include stylist first and last name

**Sub-goal 4**

Make sure to put existing stylists into stylists array “Stylist[] arrStylists”. Make sure there are max 10 spots for stylists.

**Sub-goal 5**

Ask user (client) if they want to choose from existing stylist or input a new one into the system (assuming it is not there). Therefore, I must print all the stylists in the array before the client chooses.

**Sub-goal 5.1**

Program prints names of stylists already in the system (array)

**Sub-goal 5.2**

If client chooses “Yes” for printing data for existing Stylists, then they enter the existing stylist they want.

**Sub-goal 6**

If they client wants to add a stylist that Is not in the system, I must first create a variable to hold that stylists name and then add them into the array “Stylist[] arrStylists”.

**Sub-goal 6.1**

If client chooses “No” then they input a new stylist not in the system into the array.

**Sub-goal 6.2**

Lets user know the data is in the array.

* 1. **Module and Data Specifications**

Name: public class Salon

Input: none

Output: none

Logic: Name of program

Name: public static class client

Input: none

Output: none

Logic: declares variables for user information

Name: void Request()

Input: client information (first and last name, appointment time and date, type and cost of service

Output: none

Logic: Compiles the client information

Name: public static class Stylist

Input: none

Output: none

Logic: declares first and last name for Stylist, as well as creating an array to input client information

Name: void Sinformation()

Input: Stylist first and last name

Output: none

Logic: User inputs stylists first and last name

Name: public static void insertIntoSchedule(Client person, Stylist s)

Input: none

Output: Already booked clients

Logic: Tells user if the client name is in the schedule array and full

Name: public static void fillStylistArr(Stylist[] arrStylists)

Input: none

Output: none

Logic: Creates dummy stylists for the array, so that there are stylists already inside the array

Name: public static Stylist[] FillArray(Stylist[] arryStlylists, Stylist object)

Input: none

Output: Max Number of Stylists

Logic: Tells user when stylist array exceeds 10

Name: public static Stylist retrieveFromName(Stylist[] arrStylists, Stylist object)

Input: none

Output: Could not find specified stylist

Logic: Tells user if stylist is in the array or not when they choose existing one

Name: public static void getStylistName(Stylist[] arrStylist)

Input**:** none

Output**:** Available stylists. First and last name.

Logic**:** Tells user the available stylists in the array and prints the first and last name of each one.

Name**:** public static void main(String[] args)

Input**:** none

Output**:** Do you want to print data from existing Stylists?(Yes/No)

Please print first name of stylist. Please print last name of stylist. Inserted client into schedule.

Please print first name of stylist. Please print last name of stylist. Entered stylists into array. Inserted client into schedule

Logic**:** The main method of the program. Pulls information from all other methods. Prints existing information of stylists, asks user if they want to print an existing stylist or use a new one. If selected new stylist it will prompt them to enter the desired name, if no it will prompt them to choose from existing stylists.

* 1. **Algorithm**

The algorithm is as the prompt states. It asks for user information for the client which then puts it into the stylists array for each one that is already in the system. From there the user (client) is asked if they want to put their information in all of the stylists array or just the ones that they want for their appointment.

1. **Translation**
   1. **Source Code**

Source code is part of the submission – Java file.

* 1. **Program and Module Description**

**void Request()**

Prints the client information for the user and asks them to input all the information for the client. This includes the client first and last name, date and time of appointment, and service and cost of service.

**public static class Stylist**

Declares the information for the stylist (first and last name) and creates an array that stores all of the client information.

**void Sinformation()**

Prompts the user to enter the stylist first and last name.

**public static void insertIntoSchedule(Client person, Stylist s)**

Helper method that checks the stylists schedule to make sure the pre-existing stylist that the user enters is already in the system.

**public static void fillStylistArr(Stylist[] arrStylists)**

Creates dummy stylists for the array so that there are already people in the array for the user to pick when prompted.

**public static Stylist retrieveFromName(Stylist[] arrStylists, Stylist object)**

Helper method that makes sure that the empty spots in the array are filled with names, but no more than 10 names as that is the max number set.

**public static void getStylistName(Stylist[] arrStylist)**

Helper method that gets the name of the stylist for the user, prints the available stylists that are already in the system, and then prints the name of all the stylists in the array.

**public static void main(String[] args)**

Main method that calls every function. Pulls information from all other methods. Prints existing information of stylists, asks user if they want to print an existing stylist or use a new one. If selected new stylist it will prompt them to enter the desired name, if no it will prompt them to choose from existing stylists.

1. **Solution Testing**

In the screenshots of the input/output I use a pseudo name as an example of a client and I make an output for both scenarios. One that asks the client if they want to choose from existing stylists, in which I put “Yes” and then I choose from existing. The other from which I want to input the name of my own stylist in the system (when there isn’t one in there) in which I answer “No” and put in my own name, which then adds it to the stylist array with the client information.

1. **Testing: Output**

Graphical user interface, text, application

Description automatically generated

Screenshot shows both scenarios in which client can choose “Yes” or “No”.