Programming Project / C++ – Dental Clinic Appointment System

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I. Task Description

Student 1 is responsible for managing operations and appointments:

- Adding available dental operations

- Loading and displaying scheduled appointments

- Saving the appointment history

Student 2 is responsible for interacting with the system:

- Checking appointment availability

- Scheduling new appointments

- Viewing history of scheduled visits

II. Classes Used by the Team

Operation

- char name[50]

- float price

- int duration (minutes)

Used to store details about dental operations.

Appointment

- int day, month, year, hour, minute

- Operation operation

Represents an appointment with an associated date/time and dental procedure.

Scheduler

- vector<Operation> operations

- vector<Appointment> appointments

Responsible for loading data, checking availability, scheduling, and saving appointments.

III. File Structure

The following files will be used:

op_details.txt

Contains the available operations in the format:

<name> <price> <duration>

app_details.txt

Each line contains:

<day> <month> <year> <hour> <minute> <operation_name>

IV. Interacting with Executables

The application will support the following commands:

```
./clinic.exe view_operations
```

To list all available dental operations

```
./clinic.exe check_availability <day> <month> <year> <hour> <minute>
```

To check if a time slot is available

```
./clinic.exe schedule <day> <month> <year> <hour> <minute> <operation_number>
```

To schedule a new appointment for the specified time and operation

```
./clinic.exe view_history
```

To view the history of all appointments

```
./clinic.exe save_and_exit
```

To save all appointments and exit

V. Data Structures Used

The program utilizes several key data structures for managing and processing information:

- Arrays:

- char name[50] in the Operation class is used to store operation names as C-style strings.

- vector<Operation>

- A dynamic array that stores all available dental operations.

- Used in the Scheduler class as operations.

- vector<Appointment>

- A dynamic array that stores all scheduled appointments.

- Used in the Scheduler class as appointments.

- string and cstring Functions

- std::string is used for command-line argument handling.

- strcmp, strncpy, etc., are used for comparing and copying operation names.

VI. Communication Between Components

- op_details.txt: Used to load available procedures

- app_details.txt: Updated with every new appointment

This enables a complete appointment system for a dental clinic, where operations are predefined and appointments are managed efficiently.