Report

In this program, I made a header and a .cpp file for each class where the function definitions were in the cpp file. Person class was an abstract base class. To do that, I made a pure virtual function inside of it. This function was then redefined in the inherited classes (mechanic and cust) (cust is the customer class file). In the customer class, I added two functions to get the hours and mins separately in order to use them later in the mechanic's function (is_available). In the mechanic class, I used vectors instead of using arrays as it was more convenient to have. In the main, I put both the customer and mechanic instances into arrays. Made a for loop to input the customers' info that will then be stored in the array. I checked to see which customer would be assigned to which mechanic using for loops and if statements. Then I pushed the customers into a queue. They were automatically sorted as I implemented a sort function inside the push in my template of the queue class. I then printed the information of both the customers and their mechanics on the screen. Finally, I popped the customers from the queue.

Screenshots of the output:

```
How many customers are there:
4


Customer no. 1:
Enter your name:
Ahmed
Enter your id:
20092001
Enter your age:
32
Enter your prefered appointment time:
1 0
Customer no. 2:
Enter your name:
Sara
Enter your id:
92002
Enter your age:
39
Enter your prefered appointment time:
4 0
Customer no. 3:
Enter your name:
Karim
Enter your id:
92003
Enter your age:
45
Enter your prefered appointment time:
3 0
Customer no. 4:
Enter your name:
Mohammed
Enter your id:
92004
Enter your age:
26
Enter your prefered appointment time:
1 0
```

```
.........................................................

.........................................................
Customer's info:
Name: Ahmed
ID: 92001
Age: 32
Appointment time: 01:00
assigned mechanic's info:
Name: Ayman
ID: 3001
Age: 25
Number of appointments: 1
.........................................................
Customer's info:
Name: Sara
ID: 92002
Age: 39
Appointment time: 04:00
assigned mechanic's info:
Name: Khaled
ID: 3002
Age: 34
Number of appointments: 2
.........................................................
Customer's info:
Name: Karim
ID: 92003
Age: 45
Appointment time: 03:00
assigned mechanic's info:
Name: Mai
ID: 3003
Age: 27
Number of appointments: 1
.........................................................
Customer's info:
Name: Mohammed
ID: 92004
Age: 26
Appointment time: 01:00
assigned mechanic's info:
Name: Khaled
ID: 3002
Age: 34
Number of appointments: 2
Program ended with exit code: 0
```