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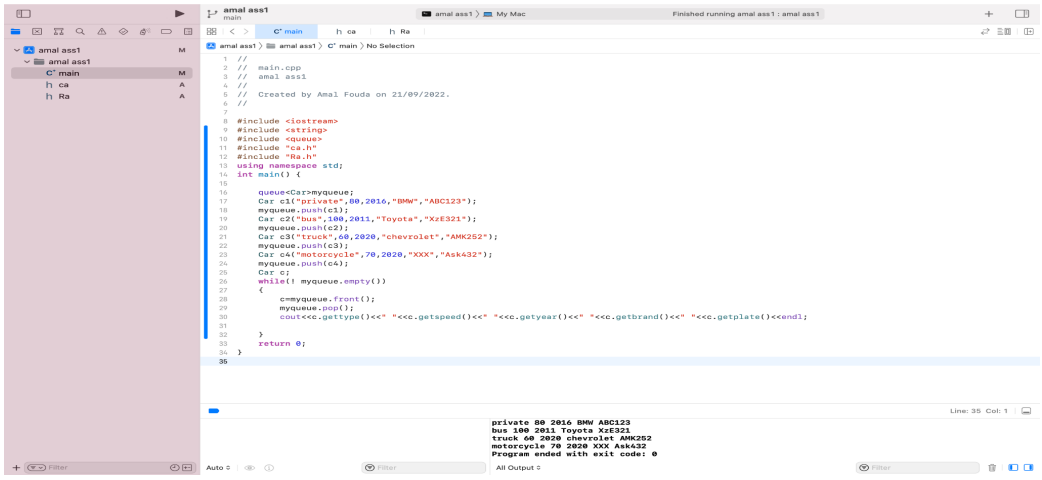

```
//
//  main.cpp
//  amal ass1
//
//  Created by Amal Fouda on 21/09/2022.
//

#include <iostream>
#include <string>
#include <queue>
#include "ca.h"
#include "Ra.h"
using namespace std;
int main() {

    queue<Car>myqueue;
    Car c1("private",80,2016,"BMW","ABC123");
    myqueue.push(c1);
    Car c2("bus",100,2011,"Toyota","XzE321");
    myqueue.push(c2);
    Car c3("truck",60,2020,"chevrolet","AMK252");
    myqueue.push(c3);
    Car c4("motorcycle",70,2020,"XXX","Ask432");
    myqueue.push(c4);
    Car c;
    while(! myqueue.empty())
    {
        c=myqueue.front();
        myqueue.pop();
        cout<<c.gettype()<<" "<<c.getspeed()<<" "<<c.getyear()<<" "<<c.getbrand()<<" "<<c.getplate()<<endl;

    }
    return 0;
}
```

```
private 80 2016 BMW ABC123
bus 100 2011 Toyota XzE321
truck 60 2020 chevrolet AMK252
motorcycle 70 2020 XXX Ask432
Program ended with exit code: 0
```

- In the first image I started by seeing if the queue works correctly or not by using a while loop (!myqueue.empty()) to print all the variables of each object in car class.

```
the object number1:
(private,120,2016,BMW,ABC123) will be fined..
allowed in A, allowed B,  notallowed C,
the age of the object:6
the object number2:
not allowed A, allowed B,  notallowed C,
the age of the object:11
the object number3:
(truck,120,2020,chevrolet,AMK252) will be fined..
not allowed A, allowed B,  notallowed C,
the age of the object:2
the object number4:
allowed in A, allowed B,  notallowed C,
the age of the object:2

the effecieny of A:50%
```

- In the second photo I declare object A from road class to see which objects can pass from road A, and to see which objects will be fined because they exceeded the speed limit, and I used a temporary object of car class to declare the values that front function stands on it, then i pop it and pass it to function allow, radar, age.

```
-----------------------------------------
the object number5:
(private,120,2016,BMW,ABC123) will be fined..
not allowed A, allowed B,  notallowed C,
the age of the object:6
the object number6:
not allowed A, allowed B,  notallowed C,
the age of the object:11
the object number7:
(truck,120,2020,chevrolet,AMK252) will be fined..
not allowed A, allowed B,  notallowed C,
the age of the object:2

the effecieny of B:100%
-----------------------------------------
```

- In the third photo I declare object B from road class to see which objects can pass from road B, and to see which objects will be fined because they exceeded the speed limit, and I used another temporary object of car class rather than the one i used in road A to declare the values that front function stands on , then i pop it and pass it to function allow, radar, age.

```
-----------------------------------------
the object number8:
(bus,100,2011,Toyota,XzE321) will be fined..
not allowed A, allowed B,  notallowed C,
the age of the object:11
the object number9:
(truck,120,2020,chevrolet,AMK252) will be fined..
not allowed A, allowed B,  allowed C,
the age of the object:2
the object number10:
(motorcycle,70,2020,XXX,Ask432) will be fined..
not allowed A, allowed B,  notallowed C,
the age of the object:2
the effecieny of B:10%
-------------------------------
```

- In the fourth photo I declare object C from road class to see which objects can pass from road C, and to see which objects will be fined because they exceeded the speed limit, and I used another temporary object of car class rather than the one i used in road B and A to declare the values that front function stands on , then i pop it and pass it to function allow, radar, age.

- Important Note, extra adds:
- I used three counters to calculate the efficiency of each road, one called i for road A, and one called J for road C, and another static one to count all the objects that enter car class so it calculates all objects enter the roads and use this number to calculate the efficiency of road B and i incremented the static count in argument constructor because it allows all cars to pass from it. I also used type casting to declare one of the variable to be float while calculating the efficiency of each road, for example,
  (eff3=(**float**(C.getj())/Car::getcount())*100).
- I did validation for the year model if it is more than 2022 give an error using while loop.

```
wrong input...enter again type!
bus
wrong input..enter again model year!
2024
wrong input..enter again model year!
2022
wrong input...enter again plate!
ABC123
(bus,100,2022,BMW,ABC123) will be fined..

wrong input...enter again road
A
Program ended with exit code: 0
```

All Output

- In the last picture I used the wrong input to test the validation of the car type, car plate, year model and road type.

```
--------------------------------
number of passed objects:2
number of passed objects:10
number of passed objects:1
```

- I printed the number of passed cars on each road.
