

PA05 - Rush Hour

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Chapter 1

Class Index

1.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Car	5
RushHour	9

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

rushhour.cpp	13
rushhour.h	13

Chapter 3

Class Documentation

3.1 Car Class Reference

```
#include <rushhour.h>
```

Public Member Functions

- [Car](#) ()
<Default constructor>="">
- int [getNum](#) ()
<Gets the="" value="" of="" private="" member="" carnum>="">
- int [getSize](#) ()
<Gets the="" value="" of="" private="" member="" size>="">
- int [getDir](#) ()
<Gets the="" value="" of="" private="" member="" dir>="">
- int [getRow](#) ()
<Gets the="" value="" of="" private="" member="" row>="">
- int [getCol](#) ()
<Gets the="" value="" of="" private="" member="" col>="">
- void [setNum](#) (int car)
<Sets private="" member="" carnum="" in="" car="" class>="">
- void [setSize](#) (int s)
<Sets private="" member="" size="" in="" car="" class>="">
- void [setDir](#) (char d)
<Sets private="" member="" dir="" in="" car="" class>="">
- void [setRow](#) (int r)
<Sets private="" member="" row="" in="" car="" class>="">
- void [setCol](#) (int c)
<Sets private="" member="" col="" in="" car="" class>="">

Friends

- class [RushHour](#)

3.1.1 Constructor & Destructor Documentation

3.1.1.1 Car::Car ()

<Default constructor>="">

Parameters

None	@ pre Car class onbject is created @ post Car class object is initialized
------	---

Returns

None

3.1.2 Member Function Documentation**3.1.2.1 int Car::getCol ()**

<Gets the="" value="" of="" private="" member="" col>="">

Parameters

None	@ pre Car class object exists @ post Car class object's col member value is returned for use
------	--

Returns

value of col member

3.1.2.2 int Car::getDir ()

<Gets the="" value="" of="" private="" member="" dir>="">

Parameters

None	@ pre Car class object exists @ post Car class object's dir member value is returned for use
------	--

Returns

value of dir member

3.1.2.3 int Car::getNum ()

<Gets the="" value="" of="" private="" member="" carnum>="">

Parameters

None	@ pre Car class object exists @ post Car class object's carNum member value is returned for use
------	---

Returns

value of carNum member

3.1.2.4 int Car::getRow ()

<Gets the="" value="" of="" private="" member="" row>="">

Parameters

None	@ pre Car class object exists @ post Car class object's row member value is returned for use
------	--

Returns

value of row member

3.1.2.5 int Car::getSize ()

<Gets the="" value="" of="" private="" member="" size>="">

Parameters

None	@ pre Car class object exists @ post Car class object's size member value is returned for use
------	---

Returns

value of size member

3.1.2.6 void Car::setCol (int c)

<Sets private="" member="" col="" in="" car="" class>="">

Parameters

column	integer @ pre Car class object exists @ post Car class objects col member is set to passed parameter
--------	--

Returns

None

3.1.2.7 void Car::setDir (char d)

<Sets private="" member="" dir="" in="" car="" class>="">

Parameters

<i>direction</i>	character @ pre Car class object exists @ post Car class objects dir member is set to passed parameter
------------------	--

Returns

None

3.1.2.8 void Car::setNum (int *car*)

<Sets private="" member="" carnum="" in="" car="" class>="">

Parameters

<i>Index</i>	integer @ pre Car class object exists @ post Car class objects carNum member is set to passed parameter
--------------	---

Returns

None

3.1.2.9 void Car::setRow (int *r*)

<Sets private="" member="" row="" in="" car="" class>="">

Parameters

<i>row</i>	integer @ pre Car class object exists @ post Car class objects row member is set to passed parameter
------------	--

Returns

None

3.1.2.10 void Car::setSize (int *s*)

<Sets private="" member="" size="" in="" car="" class>="">

Parameters

<i>size</i>	integer @ pre Car class object exists @ post Car class objects size member is set to passed parameter
-------------	---

Returns

None

3.1.3 Friends And Related Function Documentation

3.1.3.1 friend class RushHour [friend]

The documentation for this class was generated from the following files:

- [rushhour.h](#)
- [rushhour.cpp](#)

3.2 RushHour Class Reference

```
#include <rushhour.h>
```

Public Member Functions

- [RushHour](#) ()
<Default constructor>="">
- void [loadBoard](#) (int carNum)
<puts car="" object="" on="" the="" board>="">
- bool [moveForward](#) (int carNum)
<moves car="" object="" forward="" one="" space>="">
- bool [moveBack](#) (int carNum)
<moves car="" object="" back="" one="" space>="">
- bool [winCheck](#) ()
<Checks if="" board="" has="" been="" solved>="">
- void [solveIt](#) (int numCars)
<Recursive branch="" in="" bound="" tree="" search>="">
- void [print](#) ()
<Prints board="" to="" terminal>="">
- void [printCar](#) (int CarNum)
<Prints car="" object="" details="" to="" the="" terminal>="">
- void [loadcars](#) (int carNum, int carSize, char carDir, int row, int col)
<Creates car="" class="" objects>="">

Public Attributes

- bool [solved](#)
- int [numMoves](#)
- int [bestMoves](#)

Friends

- class [Car](#)

3.2.1 Constructor & Destructor Documentation

3.2.1.1 RushHour::RushHour ()

<Default constructor>="">

Parameters

<i>None</i>	@ pre RushHour class object is created @ post RushHour class object members are initialized
-------------	---

Returns

None

3.2.2 Member Function Documentation

3.2.2.1 void RushHour::loadBoard (int *carNum*)

<puts car="" object="" on="" the="" board>="">

Parameters

<i>carNum</i>	@ pre board object exists @ post car is placed on board
---------------	---

Returns

None

3.2.2.2 void RushHour::loadcars (int *carNum*, int *carSize*, char *carDir*, int *row*, int *col*)

<Creates car="" class="" objects>="">

Parameters

<i>carNum</i>	
<i>carSize</i>	
<i>carDir</i>	
<i>row</i>	
<i>col</i>	@ pre User has put info into terminal @ post Car object is initialized

Returns

None

3.2.2.3 bool RushHour::moveBack (int *carNum*)

<moves car="" object="" back="" one="" space>="">

Parameters

<i>carNum</i>	@ pre Car Object is already on the board @ post Car Object has been moved one decremental space
---------------	---

Returns

True if car was succesfully moved

3.2.2.4 bool RushHour::moveForward (int *carNum*)

<moves car="" object="" forward="" one="" space>="">

Parameters

<i>carNum</i>	@ pre Car Object is already on the board @ post Car Object has been move one incremental space
---------------	--

Returns

True if car was succesfully moved

3.2.2.5 void RushHour::print ()

<Prints board="" to="" terminal>="">

<Only used="" for="" debugging="" purposes>=""> @ pre board object exists @ post Contents of boardArr are printed to terminal

Returns

None

3.2.2.6 void RushHour::printCar (int *carNum*)

<Prints car="" object="" details="" to="" the="" terminal>="">

<For debugging="" purposes="" only>="">

Parameters

<i>carNum</i>	@ pre Car object exists @ post None
---------------	---

Returns

None

3.2.2.7 void RushHour::solvelt (int *numCars*)

<Recursive branch="" in="" bound="" tree="" search>="">

Parameters

<i>numCars</i>	- The amount of cars on the board @ pre board is not empty @ post Least amount of moves to solve board
----------------	--

Returns

void

3.2.2.8 bool RushHour::winCheck ()

<Checks if="" board="" has="" been="" solved>="">

Parameters

<i>None</i>	@ pre board Object exists @ post board columns have been checked for the 0th car
-------------	--

Returns

True if 0 is found in the last column

3.2.3 Friends And Related Function Documentation

3.2.3.1 friend class Car [friend]

3.2.4 Member Data Documentation

3.2.4.1 int RushHour::bestMoves

3.2.4.2 int RushHour::numMoves

3.2.4.3 bool RushHour::solved

The documentation for this class was generated from the following files:

- [rushhour.h](#)
- [rushhour.cpp](#)

Chapter 4

File Documentation

4.1 rushhour.cpp File Reference

```
#include <iostream>
#include "rushhour.h"
```

Functions

- int [main](#) ()

4.1.1 Function Documentation

4.1.1.1 int main ()

4.2 rushhour.h File Reference

```
#include <iostream>
```

Classes

- class [Car](#)
- class [RushHour](#)

4.2.1 Detailed Description

Author

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Date

10-3-2017

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