PA05 - Rush Hour

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Class Index

1.1 Class List

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

Chapter 2

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2.1   File List

Here is a list of all files with brief descriptions:

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

direction	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

Index	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

row	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

size	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

None	@ 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

carNum	@ 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

carNum	
carSize	
carDir	
row	
col	@ 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

carNum	@ 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

carNum	@ 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

carNum	@ pre Car object exists @ post None

Returns

> None

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

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

Parameters

numCars	- 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

None	@ 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

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