Assignment 4

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Hierarchical Index

1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

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2 Hierarchical Index

Class Index

2.1 Class List

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

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Class representing a Tableau pile in freecell	14

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File Index

3.1 File List

Here is a list of all documented files with brief descriptions:

include/CardADT.h
Representing a playing card as an ADT
include/Exceptions.h
include/Foundation.h
Representing one of four foundation piles
include/FreeCell.h
Representing one of four free cells
include/Setup.h
Representing the setup of the board and methods
include/Tableau.h
Representing one of eight tableau piles

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Class Documentation

4.1 Card Class Reference

Class representing a playing card.

```
#include <CardADT.h>
```

Public Member Functions

- Card (Rank rank, Suit suit)
 - Constructor for the Card data type.
- Card ()

creating constructor without parameter to dodge initialization

- Colour getColour ()
 - returns the colour of the card
- Rank getRank ()
 - returns rank of the card object
- Suit getSuit ()

returns suit of card

4.1.1 Detailed Description

Class representing a playing card.

of a specific suit and rank. Colour is determined by suit

4.1.2 Constructor & Destructor Documentation

4.1.2.1 Card::Card (Rank rank, Suit suit)

Constructor for the Card data type.

Parameters

rank	rank or value of card
suit	suit of card, one of the four suits

4.1.3 Member Function Documentation

4.1.3.1 Colour Card::getColour ()

returns the colour of the card

Returns

red or black depending on suit

4.1.3.2 Rank Card::getRank()

returns rank of the card object

Returns

rank of card

4.1.3.3 Suit Card::getSuit ()

returns suit of card

Returns

suit of the card

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

• include/CardADT.h

4.2 Foundation Class Reference

Class representing a Foundation pile in freecell.

#include <Foundation.h>

Public Member Functions

Foundation (Suit suit)

Constructor for a single foundation pile.

void addCard (Card c)

method for adding card onto foundation pile

· void removeCard ()

method for removing top card from foundation pile

• bool isFull ()

checks if foundation pile is complete

• Suit getSuit ()

gets the suit of the foundation

• Card topCard ()

gets the top card from the pile

4.2.1 Detailed Description

Class representing a Foundation pile in freecell.

that accepts a specific suit of cards

4.2.2 Constructor & Destructor Documentation

4.2.2.1 Foundation::Foundation (Suit suit)

Constructor for a single foundation pile.

Parameters

suit | suit of the cards belonging to the pile

4.2.3 Member Function Documentation

4.2.3.1 void Foundation::addCard (Card c)

method for adding card onto foundation pile

Parameters

c card being added to the pile

4.2.3.2 bool Foundation::isFull ()

checks if foundation pile is complete

Returns

true if full, false otherwise

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

· include/Foundation.h

4.3 FreeCell Class Reference

Class representing the free cells in a FreeCell game.

```
#include <FreeCell.h>
```

Public Member Functions

• FreeCell ()

constructor for FreeCell

• bool isFull ()

returns true if full, otehrwise false

· Card searchCard (Rank rank, Suit suit)

search for the card with the matching suit and rank

void addCard (Card c)

move card back to tableau or foundation

void removeCard (Rank rank, Suit suit)

remove card from free cells

4.3.1 Detailed Description

Class representing the free cells in a FreeCell game.

4.3.2 Member Function Documentation

```
4.3.2.1 void FreeCell::addCard ( Card c )
```

move card back to tableau or foundation

Parameters

```
c card being added to free cells pile
```

```
4.3.2.2 bool FreeCell::isFull()
```

returns true if full, otehrwise false

4.4 full Class Reference

Returns

true if all four cells are taken

4.3.2.3 void FreeCell::removeCard (Rank rank, Suit suit)

remove card from free cells

Parameters

rank	rank of card being moved
suit	suit of card being moved

4.3.2.4 Card FreeCell::searchCard (Rank rank, Suit suit)

search for the card with the matching suit and rank

Parameters

rank	rank of card being moved
suit	suit of card being moved

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

• include/FreeCell.h

4.4 full Class Reference

Inheritance diagram for full:

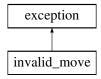


The documentation for this class was generated from the following file:

include/Exceptions.h

4.5 invalid_move Class Reference

Inheritance diagram for invalid_move:

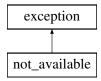


The documentation for this class was generated from the following file:

· include/Exceptions.h

4.6 not_available Class Reference

Inheritance diagram for not_available:



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

include/Exceptions.h

4.7 Setup Class Reference

Public Member Functions

- Setup ()
- Setup (vector< vector< Card >> s)
- void freeToTab (Rank rank, Suit suit, int to)

moves card from the free cells to a teableau pile

void tabToTab (int from, int to)

moves card from the Tableau "from" to the tableau "to"

void tabToFound (int from)

moves card from the Tableau "from" to the foundation

void tabToFree (int from)

moves card from the Tableau "from" to a free cell

void freeToFound (Rank rank, Suit suit)

moves card from the free cells to foundation pile

• void foundToTab (Suit suit, int to)

moves top card from a foundation pile to tableau pile

void tabTopCards ()

returns top cards on the tableau

• bool winningGame ()

Public Attributes

• Tableau board [8]

8 tableau piles

• Foundation founds [4]

4 foundation piles

FreeCell free

4 free cells

4.7.1 Constructor & Destructor Documentation

```
4.7.1.1 Setup::Setup()
```

Randomly constructs the initial state of the tableau piles and initializes freecells and foundation piles

4.7.1.2 Setup::Setup (vector < vector < Card > > >)

For manual set up of cards into tableaus

4.7.2 Member Function Documentation

4.7.2.1 void Setup::foundToTab (Suit suit, int to)

moves top card from a foundation pile to tableau pile

Parameters

suit	suit of card being moved
to	pile to which it is being moved

4.7.2.2 void Setup::freeToFound (Rank rank, Suit suit)

moves card from the free cells to foundation pile

Parameters

rank	rank of card being moved
suit	suit of card being moved

4.7.2.3 void Setup::freeToTab (Rank rank, Suit suit, int to)

moves card from the free cells to a teableau pile

Parameters

rank	rank of card being moved
suit	suit of card being moved
to	index of tableau pile beng moved to

4.7.2.4 void Setup::tabToFound (int from)

moves card from the Tableau "from" to the foundation

Parameters

	from	pile from which a card is being moved to a free cell
--	------	--

4.7.2.5 void Setup::tabToFree (int from)

moves card from the Tableau "from" to a free cell

Parameters

from	pile from which a card is being moved to foundation
------	---

4.7.2.6 void Setup::tabToTab (int from, int to)

moves card from the Tableau "from" to the tableau "to"

Parameters

from	pile from which a card is being moved
to	pile where card is dropped or appended

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

• include/Setup.h

4.8 Tableau Class Reference

Class representing a Tableau pile in freecell.

#include <Tableau.h>

Public Member Functions

Tableau (vector < Card > s)

Constructor for Tableau.

void addCard (Card c)

Adds card c to the tableau pile at hand.

· void removeCard ()

Removes top card from the current pile.

• Card topCard ()

Extracts top card from pile.

4.8.1 Detailed Description

Class representing a Tableau pile in freecell.

where each card

4.8.2 Constructor & Destructor Documentation

```
4.8.2.1 Tableau::Tableau ( vector < Card > s )
```

Constructor for Tableau.

creates a tableau based on an input vector of cards

Parameters

```
s a vector of 6 or 7 cards
```

4.8.3 Member Function Documentation

4.8.3.1 void Tableau::addCard (Card c)

Adds card c to the tableau pile at hand.

Parameters

c card being added to the pile

4.8.3.2 Card Tableau::topCard()

Extracts top card from pile.

Returns

Card object with the attributes of the card

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

• include/Tableau.h

File Documentation

5.1 include/CardADT.h File Reference

Representing a playing card as an ADT.

Classes

• class Card

Class representing a playing card.

Enumerations

```
enum Suit { C, D, S, H }
    enum type for card suits in the order Clubs, Diamonds, spades and hearts respectively
enum Colour { Red, Black }
    enum type for card suit colour
enum Rank {
```

```
Empty, ace, two, three, four, five, six, seven, eight, nine, ten, jack, queen, king }
```

enum type for card rank or value

5.1.1 Detailed Description

Representing a playing card as an ADT.

along with enume types for card attributes

5.2 include/Foundation.h File Reference

Representing one of four foundation piles.

```
#include <vector>
```

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Classes

class Foundation

Class representing a Foundation pile in freecell.

5.2.1 Detailed Description

Representing one of four foundation piles.

one for each suit

5.3 include/FreeCell.h File Reference

Representing one of four free cells.

```
#include <vector>
```

Classes

class FreeCell

Class representing the free cells in a FreeCell game.

5.3.1 Detailed Description

Representing one of four free cells.

5.4 include/Setup.h File Reference

Representing the setup of the board and methods.

```
#include <vector>
```

Classes

· class Setup

5.4.1 Detailed Description

Representing the setup of the board and methods.

for changing the game state

5.5 include/Tableau.h File Reference

Representing one of eight tableau piles.

#include <vector>

Classes

• class Tableau

Class representing a Tableau pile in freecell.

5.5.1 Detailed Description

Representing one of eight tableau piles.

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