



Einführung in die Programmierung Introduction to Programming

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Exercise Session 9



- Feedback on the mock exam
- Exercise: practicing contracts

Specification of a card game



A deck is initially made of 36 cards

Every card in the deck represents a value in the range 2..10

Every card also represents 1 out of 4 possible colors

The colors represented in the game cards are:
red ('R'), white ('W'), green ('G') and blue ('B')

As long as there are cards in the deck, the players can look at the top card and remove it from the deck

Class CARD create make



Hands-On

make (a_color: *CHARACTER*, a_value: *INTEGER*)

-- Create a card given a color and a value.

require

...

ensure

...

color: *CHARACTER*

-- The card color.

value: *INTEGER*

-- The card value.

Class CARD: which colors are valid?



Hands-On

```
is_valid_color (a_color: CHARACTER): BOOLEAN
```

```
-- Is `a_color` a valid color?
```

```
require
```

```
...
```

```
ensure
```

```
...
```

Class CARD: which ranges are valid?



Hands-On

```
is_valid_range (n: INTEGER): BOOLEAN  
    -- Is `n` in the acceptable range?
```

```
    require
```

```
        ...
```

```
    ensure
```

```
        ...
```

```
invariant
```

```
    ...
```

Class CARD create make: reloaded



Hands-On

make (a_color: *CHARACTER*, a_value: *INTEGER*)

-- Create a card given a color and a value.

require

...

ensure

...

color: *CHARACTER*

-- The card color.

value: *INTEGER*

-- The card value.

Class DECK create make



Hands-On

make

-- Create a deck with random cards.

require

...

ensure

...

feature {*NONE*} - Implementation

card_list: *LINKED_LIST*

-- Deck as a linked list of cards.

Class DECK queries



Hands-On

top_card: *CARD*

-- The deck's top card.

is_empty: *BOOLEAN*

-- Is Current deck empty?

do

...

end

count: *INTEGER*

-- Number of remaining cards in the deck.

do

...

end

Removing the top card from DECK



Hands-On

`remove_top_card`

-- Remove the top card from the deck.

require

...

ensure

...

The class invariant



Hands-On

invariant

...