Solving Word Problems

@BootstrapWorld

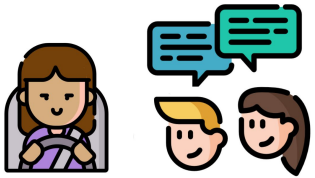
The Design Recipe

- Turn to **Creating Contracts From Examples** and write contracts for the examples provided.

- Turn to **Writing Examples from Purpose Statements** and read the purpose statements. What do you notice? What do you wonder?

Writing Linear Functions

1. Save a copy of this rocket-height file for yourself. Click "Run".
2. Type `start(rocket-height)` and hit Enter. What comes back?
3. Press the spacebar to make time pass. Does the program work?
4. What do you think it is *supposed* to do? How do you know?
5. What is the **Domain** of `rocket-height`?
6. What is the **Range** of `rocket-height`? How do you know?
7. How can we fix this function?



Students browse: code.pyret.org/editor#share=1pkPbRg_xXYum_gTQ-2GmcPa3iL4Eq6Kd&v=7d...

Writing Linear Functions

On Rocket-Height...*A rocket blasts off, traveling at 7m/s. How high is the rocket after a given number of seconds?*

Contract

```
# rocket-height :   Number   ->   Number
```

A new tool: **writing the *purpose statement***

```
# consumes the number of seconds,
# multiplies by 7 to produce the height
```

Writing Linear Functions

On Rocket-Height...*A rocket blasts off, traveling at 7m/s. How high is the rocket after a given number of seconds?*

Contract & Purpose

```
# rocket-height : Number  ->  Number
# consumes the number of seconds, multiplies
# by 7 to produce the height
```

Examples

```
examples:
  rocket-height(  0) is 7 * 0
  rocket-height(265) is 7 * 265
end
```

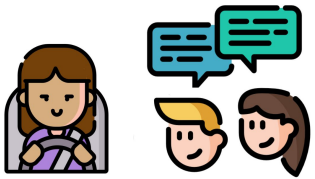
sec

Define

```
fun rocket-height( sec ): 7 * sec
end
```

Writing Linear Functions

1. Open your saved Rocket-Height file



2. Fix the code to make the rocket fly! Be sure to add the contract, purpose, examples…

3. **Save your work** when you're done!

Writing Linear Functions

What was the problem?

What mistake did the programmer make?

At what step in the Design Recipe did the **first mistake** happen? The Contract? The Examples? The Definition?

More Interesting Functions

1. At the bottom of the Definitions Area, you'll see some commented lines of code with instructions.

2. You already know what `start(rocket-height)` does.
   a. What about `graph(rocket-height)`?
   b. `space(rocket-height)`?
   c. `everything(rocket-height)`?

More Interesting Functions

1. Open your saved Rocket-Height file
2. Can you make the rocket fly faster? Slower?
3. Can you make it *accelerate over time*?

Challenges

Can you make it blast off and then land?

Can you make it blast off, reach the peak in 100s, and then land?

SAVE YOUR WORK!

More Interesting Functions

What did you try?

What worked?

What didn't?

Additional Exercises

- Writing Examples from Purpose Statements (2)
- Do Examples Have the Same Contracts?
- Do Examples Have the Same Contracts? (2)
- Matching Contracts and Examples
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