Dancing with Functions
(Teacher Version)

Corresponding Material

Introduction to Programming, Lesson 4: Functions in Karel

Discussion

We often want a program to "learn" how to do something, just like we want Karel to learn a new command. We want to use functions to teach someone how to do the "hokey pokey". We'll focus on just the foot portion of the dance for now.

You put your right foot in,
You put your right foot out;
You put your right foot in,
And you shake it all about.
You do the Hokey-Pokey,
And you turn yourself around.
That's what it's all about!

You put your left foot in,
You put your left foot out;
You put your left foot in,
And you shake it all about.
You do the Hokey-Pokey,
And you turn yourself around.
That's what it's all about!

Class Exercise

Choose one student to be a human Karel. Try "controlling" the human Karel by giving him or her each of the commands in the song.

1. Was human Karel able to dance the hokey pokey? Explain how it went.

2. There are a lot of commands in the song. Wouldn't it just be easier to say "right foot" or "left foot," or even just give a "hokey pokey feet" command? This is exactly what functions let us do - separate a big task into smaller, reusable portions. We can separate the dance into "helper functions" that our human Karel can learn. Write out the following helper functions that we can use with our human Karel. Remember to only include commands that are actual actions! (Hint: "Do the Hokey-Pokey" is not an action!)

```def right_foot():```
 ```   put right foot in()```
 ```   put right foot out()```
 ```   put right foot in()```
	Either accepted	```def right_foot():```
		 ``` right_foot_in()```
		 ``` right_foot_out()```
		 ``` right_foot_in()```

```def left_foot(){```
 ```   put left foot in()```
 ```   put left foot out()```
 ```   put left foot in()```
	Either accepted	```def left_foot():```
		 ``` left_foot_in()```
		 ``` left_foot_out()```
		 ``` left_foot_in()```

```def hokey_pokey(){```
 ```   shake all about()```
 ```   turn around()```
	Either accepted	```def hokey_pokey(){```
		 ``` shake_all_about()```
		 ``` turn_around()```

3. Now we'll put it all together. First, using the helper functions you just defined, write out your program to dance the hokey pokey with both the right and left feet.

```
right_foot()
hokey_pokey()
left_foot()
hokey_pokey()
```

4. Now use this program to tell human Karel to do the Hokey Pokey. How did it go?