

INSTRUCTIONS

- You have 10 minutes to complete this quiz.
- The exam is closed book, closed notes, closed computer, closed calculator.
- The final score for this quiz will be assigned based on **effort** rather than correctness.
- Mark your answers **on the exam itself**. We will *not* grade answers written on scratch paper.
- For multiple choice questions,
  - means mark **all options** that apply
  - means mark a **single choice**

Last name	
First name	
Student ID number	
CalCentral email (_@berkeley.edu)	
Teaching Assistant	<input type="radio"/> Alex Stennet <input type="radio"/> Kelly Chen <input type="radio"/> Angela Kwon <input type="radio"/> Michael Gibbes <input type="radio"/> Ashley Chien <input type="radio"/> Michelle Hwang <input type="radio"/> Joyce Luong <input type="radio"/> Mitas Ray <input type="radio"/> Karthik Bharathala <input type="radio"/> Rocky Duan <input type="radio"/> Kavi Gupta <input type="radio"/> Samantha Wong
Name of the person to your left	
Name of the person to your right	
<i>All the work on this exam is my own.</i> <b>(please sign)</b>	

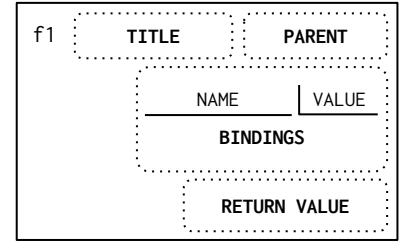
1. (5 points) All Summer Seventeen

(a) On the next page, fill in the environment diagram that results from executing the code below until the entire program is finished, an error occurs, or all frames are filled.

*You may not need to use all of the spaces or frames.*

(b) Then, for each region below, fill in the corresponding bubble. Leave a row blank if the space in the environment diagram should be left blank.

*To receive credit, you must list your bindings in the order in which they are first bound in the frame.*



FRAME	FIELD	NAMES	VALUES
	Binding 1	sum	func sum(lst) [parent=Global]
Global	Binding 2	<input type="radio"/> a	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input checked="" type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
	Binding 3	<input type="radio"/> help <input type="radio"/> lst <input type="radio"/> me <input type="radio"/> total <input type="radio"/> you	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
	Title	sum	
	Binding 1	<input type="radio"/> help <input checked="" type="radio"/> lst <input type="radio"/> me <input type="radio"/> total <input type="radio"/> you	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input checked="" type="radio"/> fig.
	Binding 2	<input type="radio"/> help <input type="radio"/> lst <input type="radio"/> me <input checked="" type="radio"/> total <input type="radio"/> you	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input checked="" type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
f1	Binding 3	<input checked="" type="radio"/> help <input type="radio"/> lst <input type="radio"/> me <input type="radio"/> total <input type="radio"/> you	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> None <input checked="" type="radio"/> $\alpha$ <input type="radio"/> fig.
	Binding 4	<input type="radio"/> help <input type="radio"/> lst <input checked="" type="radio"/> me <input type="radio"/> total <input type="radio"/> you	<input type="radio"/> 0 <input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
	Binding 5	<input type="radio"/> help <input type="radio"/> lst <input type="radio"/> me <input type="radio"/> total <input type="radio"/> you	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
	Return		<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input checked="" type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
	Title	<input checked="" type="radio"/> help <input type="radio"/> sum	
	Binding 1	<input type="radio"/> help <input type="radio"/> lst <input type="radio"/> me <input type="radio"/> total <input checked="" type="radio"/> you	<input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
f2	Binding 2	<input type="radio"/> help <input type="radio"/> lst <input type="radio"/> me <input type="radio"/> total <input type="radio"/> you	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
	Binding 3	<input type="radio"/> help <input type="radio"/> lst <input type="radio"/> me <input type="radio"/> total <input type="radio"/> you	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
	Return		<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input checked="" type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
	Title	<input checked="" type="radio"/> help <input type="radio"/> sum	
	Binding 1	<input type="radio"/> help <input type="radio"/> lst <input type="radio"/> me <input type="radio"/> total <input checked="" type="radio"/> you	<input type="radio"/> 0 <input checked="" type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
f3	Binding 2	<input type="radio"/> help <input type="radio"/> lst <input type="radio"/> me <input type="radio"/> total <input type="radio"/> you	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
	Binding 3	<input type="radio"/> help <input type="radio"/> lst <input type="radio"/> me <input type="radio"/> total <input type="radio"/> you	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
	Return		<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input checked="" type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
	Title	<input type="radio"/> help <input type="radio"/> sum	
	Binding 1	<input type="radio"/> help <input type="radio"/> lst <input type="radio"/> me <input type="radio"/> total <input type="radio"/> you	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
f4	Binding 2	<input type="radio"/> help <input type="radio"/> lst <input type="radio"/> me <input type="radio"/> total <input type="radio"/> you	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
	Binding 3	<input type="radio"/> help <input type="radio"/> lst <input type="radio"/> me <input type="radio"/> total <input type="radio"/> you	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.
	Return		<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> None <input type="radio"/> $\alpha$ <input type="radio"/> fig.

**DO NOT TURN IN THIS PAGE.**

**Remember to fill out the choices on the previous page to receive credit for this quiz.**

A complete answer will:

- Add all missing names and parent annotations to all local frames.
- Add all missing values created or referenced during execution.
- Show the return value for each local frame.

```

1 def sum(lst):
2     total = 0
3     def help(you):
4         nonlocal total
5         total += lst[you]
6         lst[you] = total - lst[you]
7     me = 0
8     while me < len(lst):
9         help(me)
10        me += 1
11    return total
12
13 a = sum([6, 1])
    
```

Global	sum	_____	→ func sum(lst) [parent=Global]
	a	7	

f1: sum	[parent=Global]	list	0   6
	lst	_____	→
	total	7	
	help	_____	→ func help(you) [parent=f1]
	me	2	
	Return Value	7	

f2: help	[parent=f1]		
	you	0	
	Return Value	None	

f3: help	[parent=f1]		
	you	1	
	Return Value	None	

f4: _____	[parent=_____]		
	Return Value		