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First name (color-in initial)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	section (4, 5 or 6)	first name initial	last name initial
Last name (color-in initial)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z			

H11: Due Thursday, 01.22 in Lab

More on GUIs: Widgets, Actions, Events, ActionListeners, Inner Classes (HFJ Ch12, entire chapter.)
Assigned: Wed 01.14 Total Points: 50

MAY ONLY BE TURNED IN IN THE LECTURE/LAB LISTED ABOVE AS THE DUE DATE,
or offered in person, for in person grading, during instructor or TAs office hours.
See the course syllabus at https://foo.cs.ucsb.edu/56wiki/index.php/W15:Syllabus for more details.

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(1) (10 pts) Fill in the information below. Also, fill in the A-Z header by

- **coloring in** the first letter of your first and last name (as it appears in Gauchospace),
- writing **either 4, 5, or 6** to indicate your **discussion section (lab)** meeting time
- writing your **first and last initial** in large capital letters.

All of this helps us to manage the avalanche of paper that results from the daily homework.

name:	
umail address:	@umail.ucsb.edu

If you collaborated with AT MOST one other person on this homework, write his/her name below. She/he should also have your name on his/her paper.

Reading Assignment:

Re-Read Chapter 12, this time reading it in its entirety.

- You read pages 353-355 and 363-368 for H10, but you might have just skimmed pages 356-362, and skipped
- This time: read the entire chapter, especially pages 356-362, and 369-398.
- The important stuff this time is about **Widgets**, **Actions**, "Events", **ActionListeners**, **Inner Classes**

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(2) (5 pts) What are five examples of Java classes that are considered "widgets"?

(3) What is the "job" of each of these objects in terms of handling an event in Java GUI programming?

(a) (5 pts) listener object (the one that implements ActionListener)

(b) (5 pts) event source object

(c) (5 pts) ActionEvent object

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(4) The author explains that each specific instance of an inner class instance has a "special bond" with a specific instance of an outer class instance.'

(a) (5 pts) Explain what this author means by this "special bond". (What I'm looking for is: what does the special bond allow the the inner class instance to do that other objects lacking this bond *cannot* do?)

(b) (5 pts) Briefly explain: how does this "Special Bond" property of inner class objects make them particularly useful for implementing an ActionListener for a Widget?

(5) (5 pts) Briefly explain one way to do animation (as explained in Chapter 12). Include a brief explanation of what you have to do to avoid "smearing".

(6) (5 pts) In the animation code there is a little line of code that is a "preview" of something that, according to the comment beside it, you "aren't supposed to know yet"--a foreshadowing of Chapter 15. But it is an essential piece of making the animation work so that it doesn't happen all in the blink of an eye, and you miss the whole thing.

What is that line of code (write it down), and what does it do (explain briefly)?