PSYCO 403/505 - Matlab for Vision Research

EXAM 1 (opened book-n-computer)

NAME: _____ CCID: _____

Total number of points: 24 (4 are extra points).

PART 1: Understanding Code.

Carefully read the experiment program VisualSearch.m, the functions ell.m, tee.m and grid.m.

Question 1: (3 points)
Describe the sequence of events in this experiment and how long each event lasts. (You can draw if you want).

Question 2: "cx and cy"
2.1. Why are the variables cx and cy "global"? (1 point)

2.2. What do the values of cx and cy represent and where are they assigned? (1 point)

Question 3: Colors
Describe how to change the colors of the stimuli in the experiment to:
Background: grey
Fixation cross: red
tees and ells: yellow and black (1 point)
(give values and location in code)

Question 4: Set Size

4.1. What changes need to be made to the program to have 2 set sizes of 4 and 8 (rather than 16 and 32)? (1 point)

4.2. What changes need to be made to the program to have three set sizes: 8, 16 and 32? (2 points)

Question 5: Grid
In your own words describe how the search elements (distractors and target) are arranged in the search display. (2 points)

Question 6: Timing

Read the code below relating to an alternate way of presenting the trial events:

```
fixtime=0.5;
ontime=0.1;
offtime=0.9;
%%%%%%% start search task
        breakflag=0;
        count=0;
        stoptime=0;

        Screen('DrawLine',window,black,Xcentre-9,Ycentre,Xcentre+9,Ycentre)
        Screen('DrawLine',window,black,Xcentre,Ycentre-9,Xcentre,Ycentre+9)
        vbl=Screen('Flip',window, [], 1);
        Screen('Flip',window,vbl+fixtime);

       t1=GetSecs;

        while (count<endtime) & (breakflag==0),

            t2=GetSecs;
            t3=t2;
            Screen('DrawTexture',window,search);
            Screen('Flip',window);
            while (t3-t2 < ontime) & (breakflag==0),
                [touch, secs, keyCode] = KbCheck;
                t3=secs;
                if touch
                    breakflag=1;
                    stoptime=secs;
                end;
            end;

            t4=GetSecs;
            t5=t4;
            Screen('DrawLine',window,black,Xcentre-9,Ycentre,Xcentre+9,Ycentre)
            Screen('DrawLine',window,black,Xcentre,Ycentre-9,Xcentre,Ycentre+9)
            Screen('Flip',window);
            while (t5-t4 < offtime) & (breakflag==0),
                [touch, secs, keyCode] = KbCheck;
                t5=secs;
                if touch
                    breakflag=1;
                    stoptime=secs;
                end;
            end;
            count=count+1;
        end;
```

6.1 Which of the two methods (above or in the full script) is more accurate at recording reaction times? Why? (3 points)

6.2 Is one of the two methods (above or in the program) more accurate at timing stimulus events? Which? Why? (3 points)

PART 2: Writing Code.

Question 7: Imagine we want to "mask" each item in the search display with a brief 100 ms black "window pane" mask. The "window pane" mask is simply a stimulus composed of all the line segments used for drawing every possible T or L stimulus.
7.1 Write a function that draws the window pane mask that takes as input: (1) window pointer specifying the window where the mask is to be drawn; (2) the x and y location of the mask. Call the function mask.m. Submit on eClass: (2 points)

7.2 Modify the trial events in the program so that the search display is always immediately followed by a "mask" display. Search display time remains at 100 ms, "mask" display duration is 100 ms but now, offtime = 800ms. Submit the modified code on eClass (in addition to your modified code, make sure you explain ALL the changes that are required to the program). (2 points)

7.3 Modify the design section of the program so that half the trials are masked and half the trials are not. Submit the modified code on eClass (make sure you explain ALL the changes that are required to the program). (2 point)

7.4 Explain how you would go about modifying the section of the code above (q.6 - timing) regarding the trial events so as to accommodate for both masked and unmasked trials in the same experiment. No need to re-write code here, just briefly explain your strategy. (1 pt).