

This is a closed notes, closed book exam.

1. What is the first value printed by the program to the right?

\_\_\_\_\_

2. What is the second value printed by the program to the right?

\_\_\_\_\_

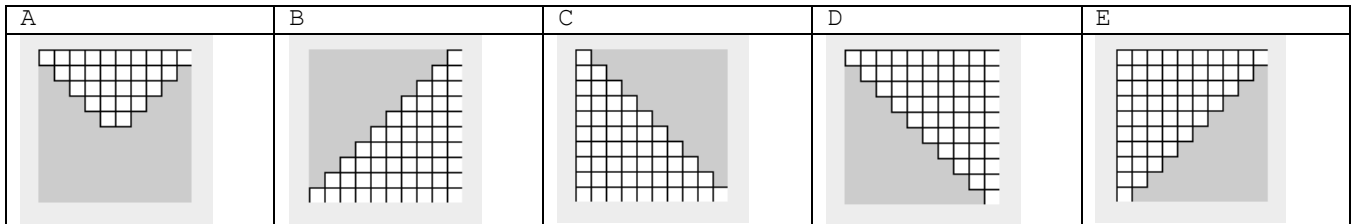
3. Which image is the result of the following program?

```
void setup() {
  for(int y=0; y<100; y=y+10) {
    for (int x=y; x<100-y; x = x+10) {
      rect(x, y, 10, 10);
    }
  }
}
```

```
void setup() {
  int[] data1 = {
    7, 10, 13, 15, 26, 37, 45
  };
  int[] data2 = {
    7, 10, 13, 10, 6, 7, 10, 10
  };

  println(func1(data1,15));
  println(func1(data2,15));
}

int func1(int[] data, int x) {
  for (int i = 0; i < data.length; i++)
    if (data[i] == x)
      return i;
  return -1;
}
```



4. In the blanks below each program, show what it prints.

```
int x = 9, y;
void setup() {
  y = timesTwo(x);
  println(x + " " + y);
}
int timesTwo(int x) {
  x = x * 2;
  return x;
}
```

\_\_\_\_\_

```
void setup() {
  int x = 9, y;
  y = timesTwo(x);
  println(x + " " + y);
}
int timesTwo(int x) {
  x = x * 2;
  return x;
}
```

\_\_\_\_\_

5. Which of the choices offered in problem 3 corresponds to the image produced by the program below?

Answer here: \_\_\_\_\_

```
for (int x=width; x>=0; x=x-10) {
  for (int y=height; y>=0; y=y-10) {
    if (y >= x) {
      rect(x, y, 10, 10);
    }
  }
}
```

6. Given the array declaration `int[] scores = new int[70];` fill in the blank so the print statement prints what is stored in the last element of the array: `println(_____);?`

**THERE ARE MORE QUESTIONS ON THE BACK**

7. (2 points) What is printed by the program to the right?

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```
void setup() {
    func1(func2(func3(3)));
}
void func1(int x) {
    println("func1 " + x);
}
int func2(int x) {
    println("func2 " + x);
    return 10*x;
}
int func3(int x) {
    int y = func2(x);
    println("func3 " + x);
    return y;
}
```

8. (2 points) Fill in the blanks and provide the missing methods so the program below shows the light as a yellow circle when on and black when off. Pressing the 'n' key will turn the light on and pressing the 'f' key will turn the light off. Clicking on the light will make it come on if it was off and go off if it was on. Clicking elsewhere does nothing.

```
Light light;
void setup() {
    size(400, 400);
    light = new Light(width/2, height/2, 20);
    noStroke();
}
void draw() {
    light.draw();
}
void mousePressed() {
    if (light.mouseOn())
        light.toggle();
}
void keyPressed() {
    if (key == 'n') light.turnOn();
    else if (key == 'f') light.turnOff();
}
class Light {
    int clr = color(255, 255, 0);
    int x, y, diam;
    boolean on = false;
    Light(int xPos, int yPos, int sz) {
        _____
        _____
        _____
    }
    void draw() {
        if (on) fill(clr);
        else fill(0);
        ellipse(x, y, diam, diam);
    }
    boolean mouseOn() {
        return _____ <= _____;
    }
    void toggle() { on = !on; }
    // add missing methods below here
```