CS 105
Introduction to Computer Programming in
JavaScript

Midterm Exam Review

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Schedule

- Lecture Class Tuesday, Oct 3:
  Questions on Text Adventure Lab
  Review for Midterm Exam
- Lecture Class Thursday, Oct 5:
- Lab Class this week: Review for Midterm Exam.
- **Midterm Exam:** Tuesday, Oct 10 (regular lecture time/room)
- Lab Class (Oct 10 - 11): Cancelled.
- Fall Break: Oct 12 - 15 (Thursday through Sunday)
Exam Format

- Short answer.
- Write on test
- May bring one page **handwritten** notes (back and front).
- May bring English/other language dictionary (made of paper) **NO** electronic dictionaries (see me if this is a problem).
- **No calculators, no computers, no phones!**
- May bring scrap paper. If you use scrap paper, you may or may not turn it in as you see fit.

Quiz: What is displayed on the Canvas?

```javascript
fill(0, 0, 0);
var i = 0;
var x = 0;
while (i < 5)
{
  i += 1;
  x += i;
}
text(x, 10, 10);
```

Shorthand for:
- `i = i + 1;`
- `x = x + i;`

a) 1  b) 5  c) 10  d) 15  e) 21
Solution to While Loop Quiz

```javascript
fill(0, 0, 0);
var i = 0;
var x = 0;

while (i < 5)
{
    i += 1;
    x += i;
    var msg = i + "", " + x;
    text(msg, 10, 50*i);
}

text(x, 10, 300);
```

To help figure out what is going on, add output inside loop.

To set 50*5 so it displays below debug output.

Quiz: What is displayed on the Canvas?

```javascript
fill(0, 0, 0);
var i = 0;
var x = 0;

while (i < 4)
{
    i += 1;
    x += i*2;
}

text(x, 10, 10);
```

| a) 10 | i = 0 + 1 = 1 |
| b) 20 | x = 0 + 1*2 = 2 |
| c) 30 | i = 1 + 1 = 2 |
| d) 35 | x = 2 + 2*2 = 6 |
| e) 40 | i = 2 + 1 = 3 |
|       | x = 6 + 3*2 = 12 |
|       | i = 3 + 1 = 4 |
|       | x = 12 + 4*2 = 20 |
Quiz: if Logic

Which if statement can NEVER be true?

a) `if (a > 80 || b > 80 || a+b > 150)`
b) `if (a > 80 && a < 150 && b > 150)`
c) `if (a > 150 && a < 80 && b > 80)`
d) `if (a > 80 && b > 80 && a < 170 && b < 170)`
e) `if (a > 100 && b > 100 && a < 200 && b < 200)`

Logic

Three computer scientists walk into a Keva Juice franchise.

The sever asks "Do all of you want a drink"?

The first says, "I don't know".

The second says, "I don't know".

The third says, "Yes!"

Why does the third know his or her answer is correct?
Quiz: Logic

A programmer's wife gives birth and the doctor immediately hands the newborn to the dad. His wife asks impatiently: "So, is it a boy or a girl"?

Which is most likely to be the correct answer?

a) A boy.
b) A girl.
c) Yes.
d) No.
e) Both.

Quiz: What is displayed on the Canvas?

1) \texttt{fill(0, 0, 0);}
2) \texttt{text(15 \% 2, 10, 10);}
Quiz: Which Image is Drawn?

//Assume the canvas is 200x200 pixels

var i = 0;
while (i<=200)
{
    line(0, i, 200, i);  //x1, y1, x2, y2
    i += 10;
}

Quiz: Which Image is Drawn?

//Assume the canvas is 200x200 pixels

var i = 0;
while (i<=200)
{
    line(i, 200, 200, 0);  //x1, y1, x2, y2
    i += 10;
}
Course Grading

Each student's final course grade is a **weighted average** of four component grades (formula is in the syllabus):

- 50% Mini (lab) Projects (lowest lab is dropped).
- 10% Quizzes (in class i-clicker).
- 20% Exams (Midterm and Final).
- 20% Final *Group* Project. (“Group” being defined as a number > 1)

Note: When calculating your course grade, **DO NOT add mini project points to quiz points or to exam points**.

Doing so is like saying: "4 yuan + 6 pesos equals 10".

Thus, Blackboard Learn shows the **INCORRECT** course grade.

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Number of students who took the exam: **92**

Mean: 75.14

Median: 82
Quiz: alert

In JavaScript, an alert is:

a) A possible security issue.

b) A box that pops up to give the user a message.

c) An error that occurs when the user attempts to access protected data.

d) An electronic signal sent to spyware that reports the user's browsing history.

e) A small creature that guards the computer from bugs.

What Does else if Mean?

From Question #2 (over half of class got this wrong):

```javascript
if (divya > ben)
{
    ben = ben + 7;
}
else if (divya > 10)
{
    divya = divya - 5;
}
```
Only an Assignment Changes Variable

```javascript
stroke(0,0,0);
var i = 0;
while (i<=180)
{
    line(100, i, 100, i+10); //x1,y1,x2,y2
    line(110, i, 110, i+10);
    line(120, i, 120, i+10);
    line(100, i+10, 120, i+10);
    i += 20;
}
```

These are NOT assignment Statements. These expressions DO NOT change the value of `i`.

This IS an assignment Statement. It CHANGEs the value of `i`.

Quiz: Variable Names

In JavaScript, which of the following is NOT a rule for creating a legal variable name?:

a) A variable name can't contain any spaces.
b) A variable name can contain only letters, numbers, dollar signs, and underscores.
c) A variable name cannot be a JavaScript reserved word.
d) A variable name cannot use camelCase.
e) A variable name cannot be a number or start with a number.
Quiz: While Loop

How many times does the JavaScript While Loop below execute?

```javascript
var rabbitsToAdd = 5;
while (rabbitsToAdd > 0)
{
    var x = Math.floor(random(gridWidth));
    var y = Math.floor(random(gridHeight));
    grid[x][y].hasRabbit = true;
}
```

a) Once  
b) Four times  
c) Five times  
d) Six times  
e) Many, many, many times