Midterm 2 Topic List

CS 107, spring 2023

The following is a guide as to what topics will appear on Midterm 2. These are not, in general, sample questions. The test will have a similar format to midterm 1: tracing problems, coding on paper problems, and conceptual questions.

Animation

Canvas

How is the Canvas grid different than a Math one?

what is top right, bottom middle, etc?

transporting-- change x and y

moving smoothly: two ways

1) timer and change x and/or change y
    a) how to get 10 px/sec.
        i) millisecond is 1/1000
        ii) set timer.interval to 100
        iii) change x 1 px per timer interval
2) speed and angle

See Animation worksheet solutions, See Chapter 8

Tracing

show memory cells for all properties, variables and parameters

slow and mechanical. Don't big picture it-- find bugs!

when a loop occurs, do the automatic things

when a function is called, set the parameter values first, then execute function

See Repeat Conceptual Solutions

See Solution to MathBlaster Conceptual

Coding Terminology

programmer-defined functions, function calls, formal parameters, actual parameters

built-in functions, output parameters, do section

event, event handler, operation, response, conditional, repeat

Circle and Label, or provide an example of each.

See Solution to MathBlaster Conceptual

See Chapters 1 and 3

Data

Data source connects to sheet (or database)

Spreadsheet and the hidden id column, key to accessing data

list of values in-- put a column into a list variable

get value from-- specify the column and row id to get a single cell

create row in-- add a row to bottom of sheet

update value in--change a particular cell

See Solution to Review: Maps, URLs, Sheets and Loops

See chapter 5,10

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persistent data, definition.

variables: why do you initialize one (up/down sample)
variables (short-term) vs persistent data (long-term)
lists, indexes, and get the indexth item
Change A to B to C if-else-if problems, slideshow versions
lists of lists
See Chapter 4

Adding Numbers and Repeat Loops
summing up the first n numbers using count with, odds, evens
summing up a list using count with or foreach
minimum, maximum
understand different repeat loops: for each, count with, repeat n times, repeat while
See Repeat Loop Solutions
Repeat Conceptual See Chapter 9

Time
Timer properties and how they affect when Timer.Fires
Apps in which a user action starts the timer, then repetitive action is in when Timer.Fires
Count down apps, count up and down

Functions
How do function work mechanically--, what happens when a function is called?
How do functions make code better from a software engineering perspective?
How do parameters make a function more reusable and general purpose?
Built-in Functions :input and output parameters, do block-- what does it signify?
See Functions, Conceptual Solutions
Solution to MathBlaster Conceptual
See Chapter 13

Maps and LocationSensor
Two ways to do maps, Map component and Maps API with WebViewer
Building a URL with fixed and dynamic parts (using join)
Using the current location and adding markers
See Solution to Review: Maps, URLs, Sheets and Loops
See Chapter 10

Web Sites, Services and APIs
What files are sent back from a web site? web service?
Who uses a web site? Who uses a web service?
What is an API? How does it relate to a web service?
See Solution to Web Services and APIs, conceptual
See Chapter 14 (starting at p. 243)