

## CMPT 381 – Even more practice questions

As before, please note: this is not a study guide – these practice questions illustrate some of the forms that the exam questions will take (as well as some general conceptual questions), but they do not cover all of the material that will be on the test.

What are the main parts of a GUI toolkit?

`button.setOnAction(ActionEvent event)`

What are the layers in the layered model?

`view+HBOX, VBox+setOnMousePress(controller::handleMousePress)`

Build a simple UI including widgets, layout, and events in JavaFX

Build a simple UI including widgets, layout, and events in Android

What is the difference between basic controls, container widgets, uneditable information displays, and abstract model widgets?

What is a containment hierarchy?

Draw the [JavaFX / Android] containment hierarchy for a given interface

Build a JavaFX application with a ListView containing a list of country names

How is a containment hierarchy used to route events?

What is the window manager's role in event handling?

What are the three kinds of event routing, and how do they differ?

How is focus different for keyboard events compared to mouse events?

Write event handlers in [JavaFX / Android] for the following simple interaction

In JavaFX, what is the difference between event filters and event handlers?

`filter-what event, then handle`

Show the event routing for the following JavaFX code in the given containment tree

`greatly reduce the need to worry about positioning, sizing and alignment widgets`

What is a layout manager and why are layout managers necessary?

How is the containment hierarchy used in layout?

Using linear layouts, build the following arrangement of widgets

What is variable intrinsic size and how is it used in layout?

Write the constraints needed to achieve the following grid-based layout

Write code for the following MVC-based system

Write MVC code for the following system that has two views

What would be the normalized coordinates for object X that can be shown in either of two views in an MVC-based system?

model=view, low cohesion

Why is it a bad idea to store your data in the UI widgets (e.g., the list items in a listbox)?

Which elements of MVC should have direct visibility to which other elements?

What is an interaction model, how does it differ from the regular model, and what is stored there?

Text

Write an InteractionModel class that stores and manages multiple selection of Blob objects

What type of interactive system is based on verbs, and what type is based on nouns? Explain.

Why is touch “overloaded” in touch-based systems? to increase touch accurate and improve ux

Write the controller class for the following simple interaction

Draw the controller state diagram for the following simple interaction

Draw the controller state diagram for the given controller code

What are Events, Context checks, and Side Effects in a controller state diagram?

Name two colour models and state what their acronyms mean RGB RGBA HSV

Name two drawing models and state the strengths and weaknesses of each

Write a custom view in [JavaFX / Android] that draws the following picture Stroke-line/pixel-graphic/region-less memory, but poor quality

When is it useful to use a clip rectangle in your 2D drawing? area that needs to be repainted

Write a method to calculate the bounding box of the given shape

Write a method to determine if a click is within 5 pixels of a line, for selecting the line (assuming a standard implementation of the distance-to-object function)

Write a general algorithm for determining whether a click is inside a triangle defined by three points

Use the transformation functions to achieve the following effects (from “before picture” to “after picture”)

Given the rotation equations, write a method to rotate a rectangle to any angle in radians

Why is grouping important in 2D visual editors? public void raiseBlob(Groupable b) {

Write a method to bring an object to the top of the display order when it is clicked on by the user int newZ = nextZ++; b.setZ(newZ);

Write a method to add to / subtract from the selection set in a multiple-select system //b.zOrder = nextZ++;

What are the two types of polymorphism in Java that can allow a model to store both individual objects and groups of objects? blobs.sort((b1, b2) -> b1.getZ() - b2.getZ()); notifySubscribers();

Where is the clipboard stored in an MVC system? Why? }

How should data be stored on the clipboard if it is to be pasted in another application?

What additional feedback is necessary for the user in drag and drop, compared to cut and paste?

What are the two kinds of undo/redo, and how do they differ?

In what situations is it not necessary to implement undo?

Write code for a CreateCommand class that can do and undo the creation of a Blob object in a visual editor

If you were writing classes GroupCommand and UngroupCommand, what data would these classes need to store?

On average, how many guesses per letter would it take to identify a sequence of random letters?

In a “type-ahead” prediction approach, how does a trie allow us to predict words?

What is “edit distance” in determining the accuracy of a text-input method?

In what ways does a chording keyboard differ from a standard keyboard?

Why does swipe-style text entry often end up with a list of candidate words?

What are “input space” and “display space” and how are they related?

What are the main input characteristics of the following input devices:

How does Android make use of a touch sampling rate that higher than the event rate?

How would you use a circular touch area (instead of a touch point) to make it easier for the user to hit buttons on a touch screen?