ICS3U0				Semester 2, 2014 - 2015

Grade 11 Computer and Information Science
Unit 1 – Test 1 – App Inventor Main Ideas

Mr. N. Nolfi
Victim: _Mr. Solutions_   Impressive work Mr. S!

KU	APP	TIPS	COM
20 /20	12/12	15/15	12/12

1. Match each term in the left column with the *best definition* or *description* in the right column. **(20 KU)**

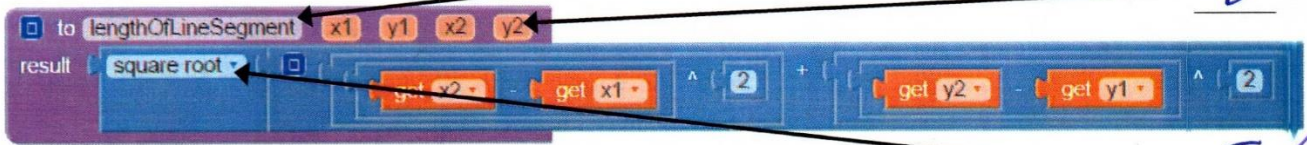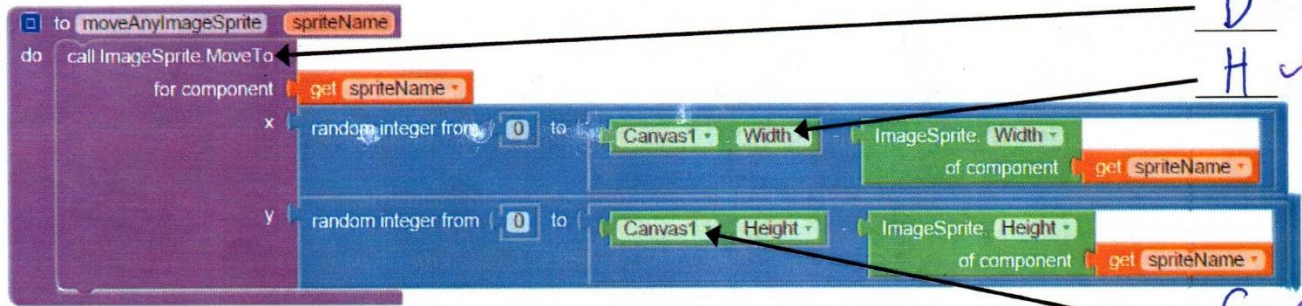|	Term		Definition
W	Event	A.	An event that occurs when an image sprite reaches the edge of a canvas.
Z	Component	B.	A minute and usually square area of illumination on a display screen, one of many from which a picture is composed.
V	Property	C.	A method that causes a sprite to rebound off the edge of a canvas.
P	Clock	D.	An ordered set of numbers that identifies a position relative to co-ordinate axes.
S	Method	E.	A beautiful "F" word that describes something that most successful people do very well.
Q	Procedure	F.	A particular course of action intended to achieve a result.
D	Co-ordinates	G.	A small image that is used in animations.
Y	Timer Event	H.	A speed dating event.
U	Event Handler	I.	A security person hired for special events (aka a "bouncer").
R	App	J.	An application.
G	Sprite	K.	WTF? What does a brand of pop have to do with computer science?
X	Execute	L.	A component that contains other components used for animations.
B	Pixel	M.	A variable that is defined only within a specific procedure.
L	Canvas	N.	Some extremely irresponsible students use washroom walls as if they were this.
T	Program	O.	A procedure that is built in to App Inventor but does not belong to any component.
E	Focus	P.	A component that is used to generate the "Timer" event at regular intervals.
O	Intrinsic Procedure	Q.	A block that contains zero or more instructions. These blocks are given names so that they can be executed when needed.
A	EdgeReached	R.	A modern term for "application software," that is, a program that performs functions of interest to computer users.
M	Local Variable	S.	An action that is associated with a component. "MoveTo" is an example of this.
C	Bounce	T.	A set of instructions that can be executed by a computer.
		U.	A procedure that is executed *automatically* in response to a specific event.
		V.	A characteristic or attribute of a component. "Text" is an example.
		W.	Something that happens while a program is running and that could cause programming instructions to be executed automatically.
		X.	Carry out an action or set of actions.
		Y.	An event that is fired at regular intervals by a "Clock" component.
		Z.	An object that can be chosen from the "Palette" menu. These have properties and methods.

2. At the bottom of the page, you will find a list of terms. For each "object" to which an arrow is pointing, write in the provided space the letter corresponding to the term that **best** describes it. You may need to use the same letter more than once and there may be letters that you do not use at all. **(12 APP)**
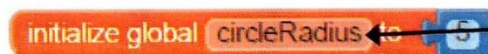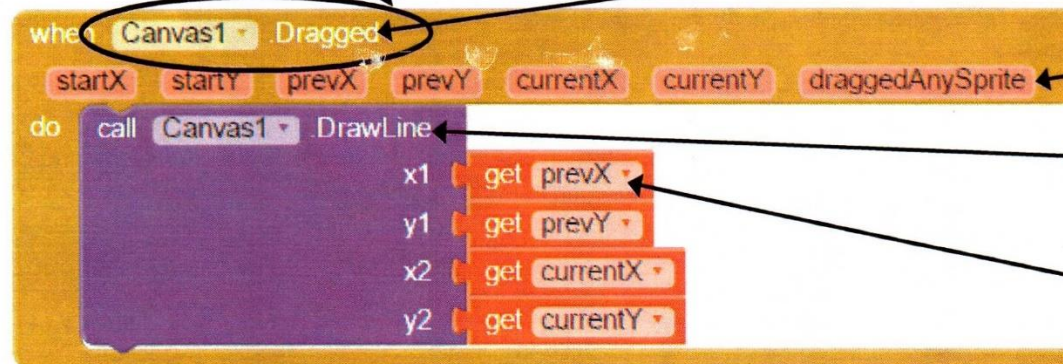
I ✓

B ✓

```
to lengthOfLineSegment  x1  y1  x2  y2
result  square root  ( (get x2 - get x1) ^ 2 + (get y2 - get y1) ^ 2 )
```

J ✓

D ✓

H ✓

```
to moveAnyImageSprite  spriteName
do  call ImageSprite.MoveTo
        for component  get spriteName
            x  random integer from  0  to  Canvas1 . Width - ImageSprite. Width
                                                           of component  get spriteName
            y  random integer from  0  to  Canvas1 . Height - ImageSprite. Height
                                                           of component  get spriteName
```

G ✓

L ✓

```
initialize global circleRadius to  5
```

K ✓

A ✓

```
when Canvas1 . Dragged
    startX  startY  prevX  prevY  currentX  currentY  draggedAnySprite
do  call Canvas1 . DrawLine
        x1  get prevX
        y1  get prevY
        x2  get currentX
        y2  get currentY
```

B ✓

D ✓

C ✓

A. Event	B. Parameter	C. Argument	D. Method
E. Initialize	F. Local Variable	G. Component	H. Property
I. Programmer-Defined Procedure	J. Intrinsic (Built-in) Procedure	K. Event Handler	L. Global Variable

3. Below you will find some blocks taken from the "SplitterBust" program. Write a *very brief* explanation of the purpose of each block. **(12 COM)**

(a)
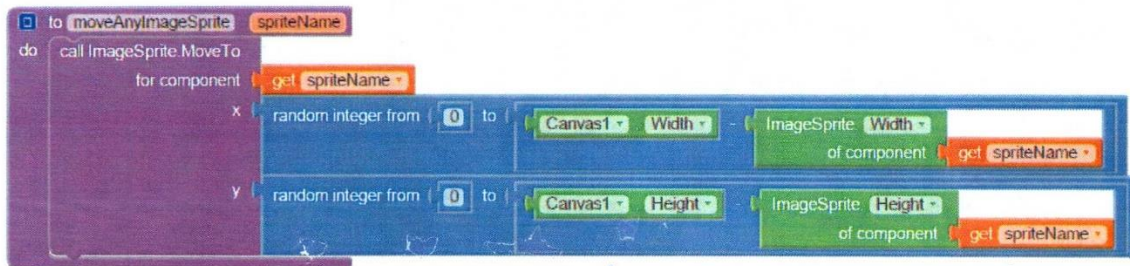
This is a programmer-defined procedure (without a result) that can move any image sprite to a random location on a canvas. This is done in such a way that no part of the sprite can move beyond the boundaries of the canvas.

(b)

This is an event handler for the "Timer" event of "SplitClock." This procedure is executed every time "SplitClock" fires a "Timer" event. Its purpose is to move "SplitImageSprite" to a random location each time that "SplitClock" fires a "Timer" event.

(c)
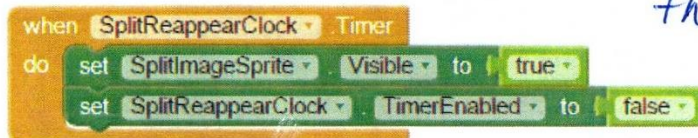
Whenever "SplitImageSprite" is tapped, it disappears for 30 seconds. This event handler makes "SplitImageSprite" reappear after the 30-second period elapses. It also disables the "SplitReappearClock" because this clock only needs to fire a "Timer" event each time "SplitImageSprite" needs to reappear.

(d)

This event handler causes "MonoTuneImageSprite" to bounce off any edge of a canvas. Whenever "MonoTuneImageSprite" collides with an edge, it bounces off at the same angle at which it collided with the edge.

4. Write a procedure with a result that takes the co-ordinates of two different points as inputs and returns (i.e "outputs") the equation of the line passing through the two points. To do this, follow the instructions given below very carefully! **(15 TIPS)**
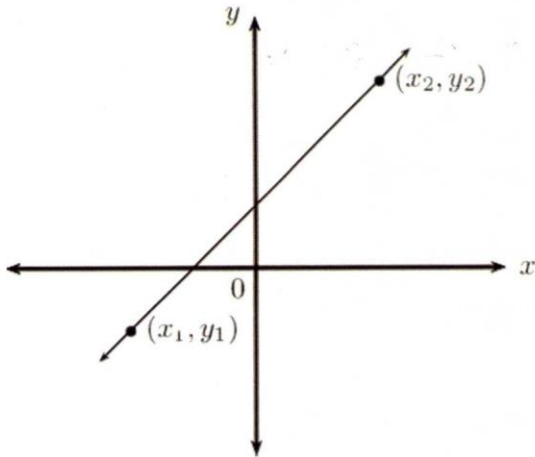
slope $= m = \dfrac{y_2 - y_1}{x_2 - x_1}$

y-intercept $= b = y_1 - mx_1$

Equation: $y = mx + b$

Hint: Use a "join" block to piece together the various parts of the equation


Important Instructions

Carefully follow the instructions given below to complete the app.

(a) Upload "Test_March_12_2015.aia" from "S:\OUT\Nolfi\ICS3U0" to your "My Projects" page in App Inventor. Do this by selecting "Import project (.aia) from my computer..." in the "Projects" menu.

(b) Rename the project by *adding* your name to the existing project name. Do this by selecting "Save project as..." in the "Projects" menu. (**e.g.** "Baramdeo_Victoria_Test_March_12_2015.aia")

(c) Create blocks that solve the problem described above. Make sure that the equation of the line is displayed in the provided label when the user clicks on the provided button.

(d) When you have completed the app, download the project from your "My Projects" page to your "G:" drive. Do this by selecting "Export project (.aia) from my computer..." in the "Projects" menu.

(e) Save a copy in "S:\In\Nolfinator\Ics3u0B*YourName*," where *YourName* stands for your name.

```
This procedure has the following limitations:
1. When x1=x2, division by zero occurs in the slope
calculation, resulting in a slope of infinity. In this case,
the equation is not constructed correctly.
2. When the y-intercept is zero, the equation takes the form
y=mx+0.
3. When the y-intercept is negative, the equation takes the
form y=mx+-b.
```
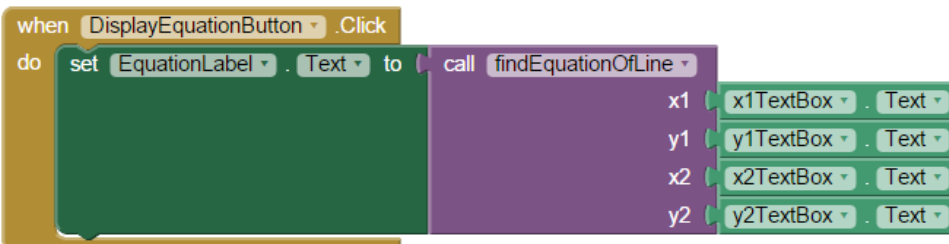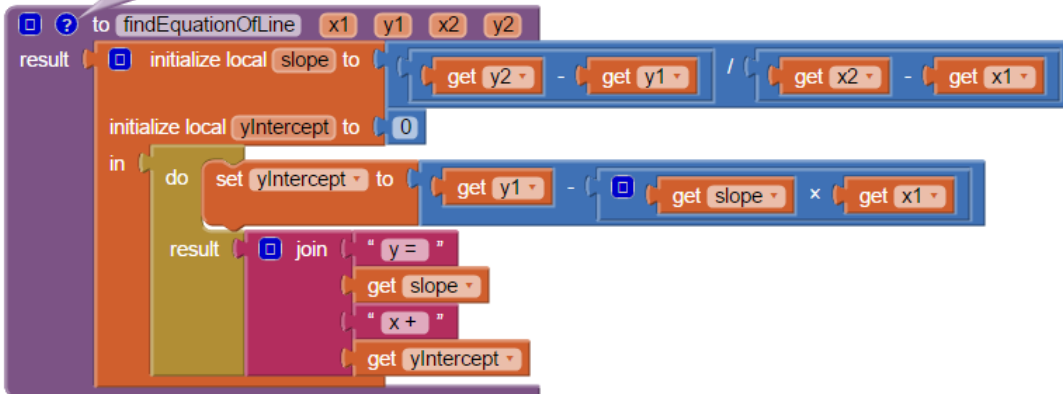
This version of "findEquationOfLine" has no limitations.
It responds correctly regardless of the values of the parameters.

Improvement
Replace "circled" part
with the given "if"
statement.