NCE Conference: Mobile App Development Workshop  
June 6, 2017

1. Welcome and Introductions
2. Introduction to Google CS4HS Program
   • CS4HS resources on our website: http://unk.edu/academics/csit/GoogleCS4HSGrant.php
   • 7 Big Ideas (flash cards)
     1. Creativity
     2. Abstraction
     3. Data & Information
     4. Algorithms
     5. Programming
     6. The Internet
     7. Global Impact
   • Computational thinking (CT): Pattern Recognition, Problem Decomposition, Abstraction, Algorithmic Development
   • An excellent game for students and an excellent introduction to CT: games.thinkingmyself.com/
   • CS teaching resources starting point: csteachers.org

3. Mobile App CS Principles course materials
   The teaching resource we are using is the “Mobile App Development CS Principles complete course: http://www.mobile-csp.org. (Watch the introduction video.)

4. Intro to App Inventor
   • Please familiarize yourself with the App Inventor website: http://appinventor.mit.edu
   • Extra! Teaching website: http://www.appinventor.org/. Review the App Inventor "Teach" educational resources, including the forums, curricular resources, tutorials, FAQ, etc.

5. Getting logged in – we will do this step together

Accounts/setup for today
1. Log in to the computer
   a. username: csitguest@unk.edu
   b. password: Summer2017
   c. from start menu, run: aiStarter.exe

2. On the CSIT phone, enable Wi-Fi Account for UNK_Secure:
   a. Network: UNK_Secure
   b. username: csitphone@unk.edu
   c. password: GoLopers2017

   Note, on the sample phone we have set up for you:
   • QR Code Reader App
   • Ability to install from unknown sources
   • Developer options: set for USB debugging

3. Wireless for yourself (optional)
   a. Network: UNK Guest
   b. Create your own login/password
   c. Note: you will need to log into your email to activate this. You can do this from the lab computer.

4. On the lab computer, go to: 
   http://appinventor.mit.edu

5. Click the orange “Create apps!” button. It will ask for a gmail account for Android App Development
   a. Use your own Gmail account,
   b. OR use: girlscoutstem1 (1-15), with password: girlscout
6. **Getting Started Programming – we will do this step together**
   - Complete Unit 2 (I have a Dream parts 1 & 2). For those taking CSIT 834P, this assignment is due 6/24.

1. Go to [https://ram8647.appspot.com/mobileCSP/unit?unit=1](https://ram8647.appspot.com/mobileCSP/unit?unit=1). This has a 9 minute tutorial, but instead, we will work on it together.

2. Click here to open the I Have a Dream Starter project in App Inventor. (Press continue to get started.)

3. We start in Design Mode. Let’s look around
   - Screen1: center
   - Left side: Items we can add to the screen, plus other “drawers” with more items we can use.
   - Right side: components, media, and properties of the components. For now, we have the “screen1” component and its properties. We also have media files we can use.
   - Right side: above properties, we have “Designer” and “Blocks”. We are in the designer now. The “Blocks” is where we add the action/behavior of the components.
   - Top left, we can go to our other projects, connect this project to a phone (we will not use this), build (we will use this to create a QR code that we can open on the phone)

4. Drag button to Screen1
5. Set its image to “mlk.jpg”.
6. Remove the button text.
7. Add a label above the button to describe the button, and another below the button, to tell the user what to do.
8. Change screen background to black
9. Change Labels text to white
10. Add media-> player, and set its source to the king.mp3 file.
11. Let’s look at it on the phone. Go to Build-> App (QR code). Open the QR code reader on the phone. Click open, ok, install, etc. until it opens on the phone. Right now, it does not respond to any user action.

12. Now let’s add the action! Go to Blocks. Let’s look around
   - Center: Viewer. This is the place to add the blocks that we want to work.
   - Left side: Here are the blocks we can use. There are built-in blocks, and blocks for each of the components we added in the designer.
13. Add the button1 block: “When Button1.click”.
14. Inside that block, Add “call player1.start”.
15. Download apk & test on phone – use QR code reader again!

**I have a dream 2:**
1. Go back to the Designer, Add Malcom button (remove text, add image).
2. Change MLK image to the smaller MLK image.
4. Drag images into the layout – on top of each other.
5. Rename buttons appropriately. (Click on the component. Just above “media” is the rename button.)
6. Change the screen horizontal alignment to “center”.
7. Add an image of them together above the buttons.
9. Add another player for Malcom’s speech. & rename players appropriately.
10. Go to Blocks to add the actions.
11. Add Malcom button & make it play
12. Try it out. Is anything wrong?
13. Control: if/ then. Click the “star” and add “else” inside the “then”.
14. Make the code: If MLK is playing – pause it, otherwise play it
15. Copy code to Malcom button, and adjust to the correct player and button.
16. Test!
17. Anything wrong?
18. Add pause of other player, when the other button is clicked, before you check if the player is playing.
19. Test again!

**I have a dream project:**
1. Change the top label to ask the user to enter what MLK Jr is telling Malcom.
2. Add text box below the top label.
3. Add text to speech media.
4. Change the MLK/Malcom image to a button to play the text to speech, when it is clicked, or add accelerometersensor that starts to text to speech when the phone is shook.
5. Add needed code.
6. Add your own stuff!
7. App Inventor Programming Assignment 1: Unit 3 Paint Pot
   Complete Unit 3 Paint Pot & Paint Pot 2 related activities on:
   https://ram8647.appspot.com/mobileCSP

   This example illustrates an app with many buttons that change the user interface (UI) experience. It also illustrates the use of variables, drawing lines and using the camera. On your own time, read through all of the supplemental teacher's guides for this lesson.

   **Using your own ideas and the suggested enhancements, enhance/customize the Paint Pot app.** For those taking CSIT 834P, this assignment is due 6/28.

   *Time to share what you’ve done or plan to do!*

8. App Inventor Assignment 2: Android Mash Customization
   - Complete Unit 4 Android Mash related activities on: ram8647.appspot.com/mobileCSP
   - Using your own ideas and the suggested enhancements, customize the Android Mash app. Science/Math teachers: think about how you could model a scientific process, or set up a simulated scientific experiment through an app using the random number generator. For those taking CSIT 834P, this assignment is due 7/3 and is worth 20 points.

9. App inventor Assignment 3: Pong
   - Complete Unit 5 Logo animation and Pong game on: ram8647.appspot.com/mobileCSP
     These examples illustrates the use of sprites, variables, control with if/else, and procedures. On your own time, read through the supplemental teacher's guides.
   - Using your own ideas and the suggested enhancements, customize Pong (or create a similar) game. Add documentation to each program stack. For those taking CSIT 834P, this assignment is due 7/13 and is worth 20 points.

More good stuff:
- https://css-cs4hs.appspot.com/CS4HS2013/course
- CS Principles course materials: (On your own time, read about the Computational Thinking Practices pages 10-11 and the Big 7 ideas pages 12-38.)
- Check out the resources on our website: www.unk.edu/academics/csit/GoogleCS4HSGrant.php