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| This lesson suggests several small programming projects for enhancing the Paint Pot app. Hints and suggestions are provided.    **Objectives:**The objectives of this lesson are:   * to continue learning how to navigate the App Inventor online programming platform. * to deepen your understanding of event-driven programming. * program additional events into an existing mobile app; * learn to solve simple programming problems. | PaintPotProjectPreviewIMG.png    ***[Click to watch Preview Video](http://www.youtube.com/watch?v=BVCrfDvjuIY)*** |

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## Getting Ready

Open App Inventor with the [Paint Pot Projects template](http://ai2.appinventor.mit.edu/?repo=templates.appinventor.mit.edu/trincoll/csp/unit3/templates/PaintPotProjects/PaintPotProjects.asc) in a separate tab and follow along with the following tutorial. After the project opens, use the *Save As* option to rename your project *PaintPotProject#* -- where # will be replaced by the mini project number you will complete from the list of mini projects below. (e.g. PaintPotProject1, PaintPotProject2, etc.).

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## Paint Pot Projects

Here are some creative projects. Working in pairs, work through the following enhancement ideas. As you work through the projects, use the *Save As* button to rename your project to “PaintPotProject#” [where # will be replaced by the mini project number you will complete from the list of mini projects below.]

You are encouraged to discuss your ideas for how to solve these problems with the instructor and your classmates.

1. Add a button to support a 4th color option for the app.
2. Add a custom image to the app instead of using the cat image that is provided. You can upload images to your project from either the *Designer View*  or *Blocks Editor* view. Use the image as the Canvas background image. Make sure the image doesn’t have any copyright restrictions.
3. Instead of using an existing image, take a photo with the camera and use that as the Canvas background image! (Hint: For this you’ll need to use a Button, the Camera, and the Camera’s AfterPicture event.) See the [Paint Pic tutorial](http://explore.appinventor.mit.edu/teach/paint-pic) for assistance.
4. The app currently has a ButtonPlus and ButtonMinus. But, we only completed the code for ButtonPlus. Now that you understand how to increment variables by 1, implement an algorithm for ButtonMinus that will subtract 1 from *dotsize*.
5. **Optional:** Currently, if a user wants to use a larger dot and then use a smaller dot (or vice versus), they have to continually press the ButtonMinus (or ButtonPlus). If the current value of *dotsize* is 25, getting to 4 would be pain. For easier use, add a button that resets the size of the dot (circle) back to 5. (HINT: You’ll need a second variable here to remember the original value of the dotsize.)
6. **If/Else Exercise:** In computer programming, a bug is an error or defect, that prevents the app from working the way it is supposed to. In this app, if the user continues to press ButtonMinus, the value of *dotsize* will eventually become negative. If *dotsize* is negative, what will be drawn when the user touches the screen? Try fixing this bug by adding an ***if/them algorithm*** to the ButtonMinus block. (Hint: The If/Then block is found under Control in the Toolbox. If you’ve done the [I Have A Dream Part 2 lesson](https://docs.google.com/document/d/1U2M72V0XGXl0j6F72UX_QB3uY939f2LhVnlTyixWH6k), you’ve already seen how to use an if/else block.)
7. **Optional:** Add a [Social/Sharing component](http://ai2.appinventor.mit.edu/reference/components/social.html#Sharing) and a share button to email what is drawn on the canvas using the Sharing.ShareFile block with the [Canvas.Save block](http://ai2.appinventor.mit.edu/reference/components/animation.html#Canvas). You will have to set up an email account on your tablet to use the share component.
8. **Optional:** Create one or more of your own enhancements for your app. Remember to write your ideas down in *pseudocode* before you begin programming.

Nice work! Now reflect on what you learned in this lesson and then try the interactive exercises with the goal to answer each question correctly on the first try.

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# Reflection for the Student

In your portfolio, create a new page, under the *Creative Projects* category, named ***Paint Pot Projects*** and answer the following questions:

1. Give brief descriptions of the enhancements you added to your app. Provide screen shots of important blocks and describe how you used them to solve certain programming problems. Include a description of any significant problems or bugs you encountered and how you solved them.
2. After completing the projects, the app will have the ability to take photos and allow you to draw on them. Did you notice that when you close the app, your pictures disappear and upon reopening the app you need to take new pictures. Do you have any ideas about how you might be able to get the pictures to remain in the app/on the device even after the app has been closed?