



Account  
Dashboard  
Courses  
Groups  
Calendar  
Inbox  
History  
Commons

## HW2 ▾

[Start Assignment](#)

Due May 4 by 11:59pm Points 100 Submitting a website url or a file upload  
Available until May 5 at 11:59pm

### Mobile Applications for Sensing and Control (EEP 523)

#### Homework Assignment 2

Video of the App:

[https://uwnetid-my.sharepoint.com/:v/g/personal/tejashti\\_uw.edu/EQfSLBAkgG5Nmvdhusrl2xMBJS5C65sedpYVoZJX-r-XA?e=WRsRqj](https://uwnetid-my.sharepoint.com/:v/g/personal/tejashti_uw.edu/EQfSLBAkgG5Nmvdhusrl2xMBJS5C65sedpYVoZJX-r-XA?e=WRsRqj)

[https://uwnetid-my.sharepoint.com/personal/tejashti\\_uw.edu/\\_layouts/15/stream.aspx?id=%2Fperson%2Ftejashti%5Fuw%5Fedu%2FDocuments%2FAttachments%2FXRecorder%5F20250422%5F03%2Emp4&referrer=StreamWebApp%2FWeb&referrerScenario=AddressBarCopied%2Fview%2E7761b920%2De02a%2D4a6b%2Da919%2D530c6ce94512](https://uwnetid-my.sharepoint.com/personal/tejashti_uw.edu/_layouts/15/stream.aspx?id=%2Fperson%2Ftejashti%5Fuw%5Fedu%2FDocuments%2FAttachments%2FXRecorder%5F20250422%5F03%2Emp4&referrer=StreamWebApp%2FWeb&referrerScenario=AddressBarCopied%2Fview%2E7761b920%2De02a%2D4a6b%2Da919%2D530c6ce94512)



(Watch the video in 1.5x-2x if it is very slow for you)

**Objective:** The goal of this assignment is to continue exploring Kotlin and to practice accessing native features and APIs in Kotlin. Explore Figma (optional for this assignment.)

Template Codebase :

[HW2\\_Template.zip](#)

You can also use your own codebase.

Requirements:

#### BOTTOM TOOLBAR

- Implement a Bottom Toolbar
  - Tab 1 – Sensors
  - Tab 2 – Draw
  - Tab 3 – Camera

#### SENSOR TAB

- Access the Sensors (choose 3 sensors) – Magnetic, Proximity, Light, Step Counter, Accelerometer, Gyroscope, Pressure in your Android Device.
  - Request for necessary permissions to access the hardware Sensors.
- If the Sensor is not supported or not available display a Toast message or some message indicating the Sensor Error
- (Optional) Design your own Figma Screen to display the results of the Sensors

#### DRAW TAB

- Add a Draw Tab to your App. This Tab should give the users the ability to select any image from the photo gallery and draw over it.
- Give users the option to switch between the colors of the brush.
- Ask users for permission to access the photo gallery
- Users must have ability to reset to original photo
- Users must be able to save the edited photo to the photo gallery as a new image.

#### CAMERA TAB

- Add a Camera Tab to your App. This Tab should have the capability of using both front and back cameras of your phone to click a picture, that you can save in the image gallery on your device.
- The app should have a feature to change the camera from back to front and vice versa.
- The app should be able to click the photo and save it locally in your phone.
- The app should have an ImageView component to display your clicked photo.
- Ask users for permission to access the photo gallery and camera

Handle all the Error Scenarios like when permission not given etc.

#### Submission:

Your submission should include:

- A zip file or containing the source code for your app or GitHub release Link.
  - If you decide to use GitHub release link, make sure you share it with us @sosper30, @Tejasrichatbot and @Maggie-GitHub
- A readme file inside your zip file explaining how your app works, how many hours it took you to complete it, what were the most challenging parts, and please cite all the websites and any other resources you used.
- A video showcasing the working of your App, you may include your voice, it is not compulsory. Your video should show all the requirements of the assignment.

#### References:

- Select/Download custom icons (use the free licensed): <https://www.svgrepo.com>

#### Grading:

This assignment will be graded based on the following criteria:

- Proper functioning of the app (85%)
- Quality and clarity of the code, and a descriptive readme file (15%)

#### HW2 Rubric

Criteria	Ratings			Pts
Bottom Toolbar All tabs (Sensors, Draw, Camera) fully functional and user-friendly.	<b>10 pts</b> <b>Full Marks</b> The app can create menu bar and can successfully move to the other Tab.	<b>5 pts</b> <b>Partial Marks</b> One or two tabs are functional but may have minor issues.	<b>0 pts</b> <b>No Marks</b> Not able to create menu bar	<b>10 pts</b>
Sensors Tab Ask for permission from users to use sensors and display Sensor readings on the App	<b>15 pts</b> <b>Full Marks</b> Atleast 3 sensors implemented, permissions asked from user and values displayed correctly on the App. Clear message to ask for permission displayed.	<b>10 pts</b> <b>Partial Marks</b> Fewer than 3 sensors implemented or minor issues in sensor performance or displaying of the readings.	<b>0 pts</b> <b>No Marks</b> No Sensors tab implemented.	<b>15 pts</b>
Sensor Tab Handling the permissions to access the hardware Sensors for Android 10+ version phones. Handle the Error scenarios as well.	<b>10 pts</b> <b>Full Marks</b> All necessary permissions are requested correctly, (for Android 10+ versions). User is informed about permissions and their purposes.	<b>5 pts</b> <b>Partial Marks</b> Most permissions requested correctly but no handing for all active android versions.	<b>0 pts</b> <b>No Marks</b> No permissions asked.	<b>10 pts</b>
Draw Tab Image Selection	<b>5 pts</b> <b>Full Marks</b> Users can seamlessly select any image from the photo gallery without issues and errors.	<b>2.5 pts</b> <b>Partial Marks</b> Image selection feature is present but has minor issues	<b>0 pts</b> <b>No Marks</b> Not able to select images	<b>5 pts</b>

permissions asked.				
Draw Tab Drawing Functionality	<b>10 pts</b> <b>Full Marks</b> Users can draw over the selected image with smooth interactions.	<b>5 pts</b> <b>Partial Marks</b> Drawing functionality is present but may have bugs like scaling, rotation etc.	<b>0 pts</b> <b>No Marks</b> Cannot draw over the image	10 pts
Draw Tab Color Switching	<b>5 pts</b> <b>Full Marks</b> Users can easily switch between multiple colors for their brush with a simple interface.	<b>2.5 pts</b> <b>Partial Marks</b> Color switching is available but not user-friendly or has some bugs.	<b>0 pts</b> <b>No Marks</b> Not able to access sensor data	5 pts
Draw Tab Reset Functionality	<b>10 pts</b> <b>Full Marks</b> Users can reset the drawing to the original photo with a clear option.	<b>5 pts</b> <b>Partial Marks</b> Functionality exists but with some errors	<b>0 pts</b> <b>No Marks</b> No such functionality	10 pts
Draw Tab Saving Function	<b>5 pts</b> <b>Full Marks</b> Users are able to save the edited photo to the photo gallery as a new image without errors. A toast message is displayed when the action is successful.	<b>3 pts</b> <b>Partial Marks</b> Users are able to save the edited photo to the photo gallery but has some errors, OR No Toast message displayed.	<b>0 pts</b> <b>No Marks</b> No such functionality	5 pts
Camera Tab Switch Camera Functionality	<b>10 pts</b> <b>Full Marks</b> The app successfully utilizes both front and back cameras, allowing users to switch between them seamlessly.	<b>5 pts</b> <b>Partial Marks</b> Camera functionality is present but may have minor issues (e.g., difficulty switching cameras).	<b>0 pts</b> <b>No Marks</b> Cannot switch the camera	10 pts
Camera Tab Saving Function	<b>5 pts</b> <b>Full Marks</b> Captured photos are saved locally in the gallery correctly, with notifications indicating success.	<b>3 pts</b> <b>Partial Marks</b> Photos are saved, but there may be issues with file formats or notifications not working.	<b>0 pts</b> <b>No Marks</b> No such functionality	5 pts
Code Quality Code should be clear and readable with added comments	<b>10 pts</b> <b>Full Marks</b> 1. Comments added to the code. 2. Error Handling. 3. Good, meaningful icons selected 4. Standard Coding practices followed 5. Code is modularly structured in files	<b>2 pts</b> <b>Partial Marks</b> Every criterion is 2 point	<b>0 pts</b> <b>No Marks</b> Nothing followed	10 pts
Code Quality Readme file with explanations about the functionality of the App and important information to get started with the repository.	<b>5 pts</b> <b>Full Marks</b> A descriptive readme file covers all the required things: acknowledgments, number of hours you worked, working of your app, and the challenges you faced.		<b>0 pts</b> <b>No Marks</b> No Readme file	5 pts
BONUS Figma Design	<b>5 pts</b> <b>Full Marks</b> The app design created on Figma and this design is followed while developing the App.	<b>0 pts</b> <b>No Marks</b> No Figma Design created		5 pts

Total Points: 105

◀ Previous

Next ▶