

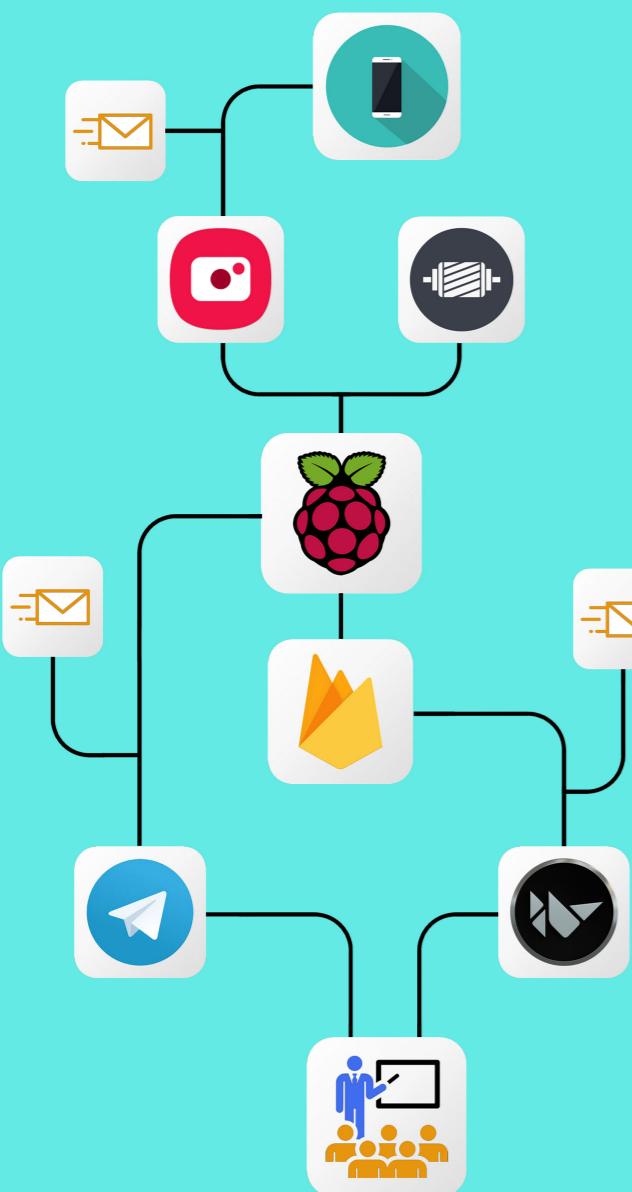
# ohsnapp

During Cohort Clasrom activities, it is often difficult for students seated far away from the Instructors or obstructed by classroom materials (e.g. cables, mobile whiteboards) to see what is being explained or presented at the front of the classroom. Taking photos of critical information during lessons will thus be a problem.

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## 0 ohsnapp

In our attempt to make SUTD a smart campus, we seek to improve cohort-based learning by weaving network and information-based technology into Raspberry Pi camera modules. By integrating a 'Telegram' bot with Firebase and Kivy applications, we plan to establish an automated camera system, "ohsnapp", that will be able to capture vital lesson contents. Students will be able to instantaneously access high quality images of syllabus explications right from their phone with just the push of a button, without having to physically exert themselves by taking photos during lessons and instead focus on listening in classes.



06

After selection, the Kivy UI runs a code via Firebase that activates the Servo Motors, physically adjusting the angle of the camera module.

05

The student rep just needs to log in to the Kivy system, where a UI will provide various camera perspective angles to choose from.

04

A Cohort Class representative will also be able to adjust the alignment of the Camera Module via Servo Motors embodied into the "ohsnapp" casing.

03

The Raspberry Pi saves a jpg image of what was captured and sends it back to the Telegram Bot, straight into the students' individual phones.

02

The Telegram Bot will then send a signal to the Raspberry Pi, triggering the Camera Module to capture a photo.

01

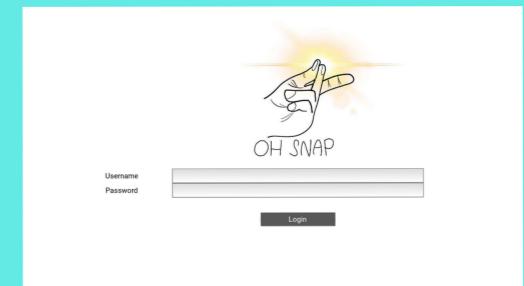
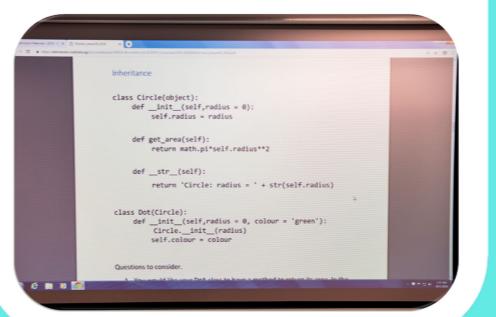
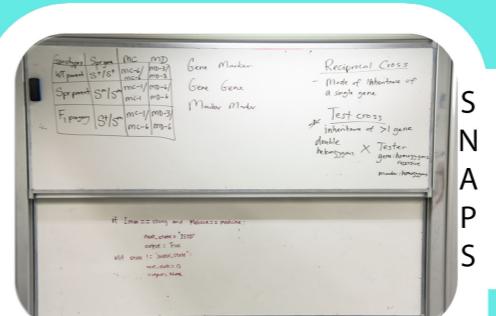
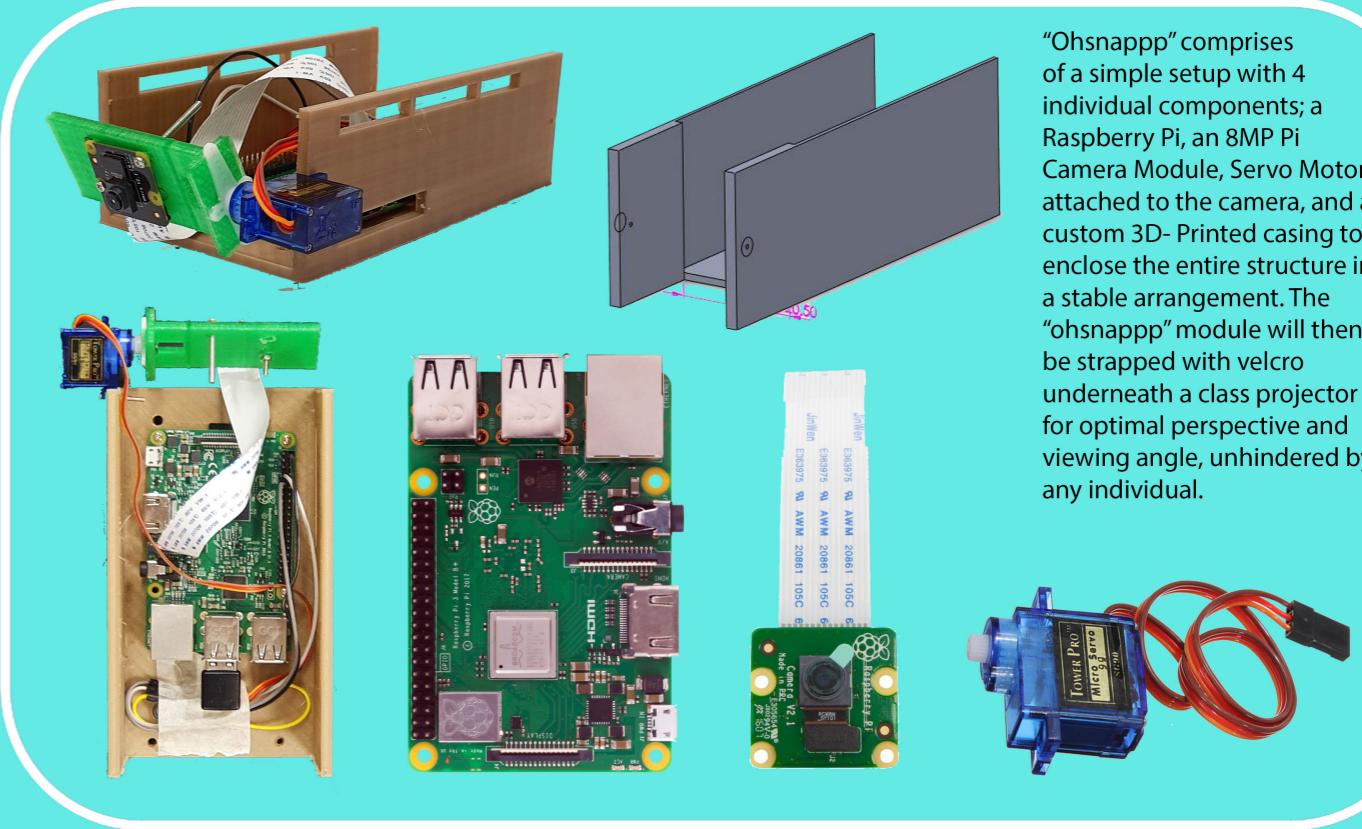
After adding the Telegram Bot to their contact list, students need just send "/takepicture" to our ohsnapp bot within Telegram whenever they wish to take a photo.



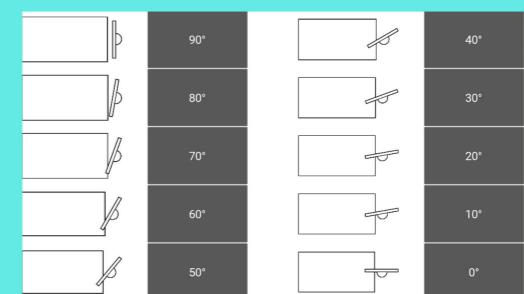
@ohsnapp bot

## SCHEMATICS

"Ohsnapp" comprises of a simple setup with 4 individual components; a Raspberry Pi, an 8MP Pi Camera Module, Servo Motors attached to the camera, and a custom 3D-Printed casing to enclose the entire structure in a stable arrangement. The "ohsnapp" module will then be strapped with velcro underneath a class projector for optimal perspective and viewing angle, unhindered by any individual.



Kivy /login Screen



Kivy /Camera Adjustment Screen

### Benefits:

Aside from the provided convenience, instead of having to disseminate specific slides or print out notes, the instructors may just accentuate on the vital lesson contents and entrust the students to take photos independently via ohsnapp. Also, for physical demonstrations carried out in class (e.g. molecular structures), students can just take photos instead of straining to get a good view.

### Disadvantages/Areas-For-Improvement:

To improve the versatility of ohsnapp, we infused angle adaptability via Kivy UI. However, this setup could still potentially include the ability to orientate the camera module between landscape-portrait modes, and utilise machine learning to adjust the image settings (brightness & contrast) for optimal quality.