

## PROJECT TWO: MILESTONE 2 – COVER PAGE

Team Number: 

Mon-30
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Please list full names and MacID's of all *present* Team Members

Full Name:	MacID:
Charlotte Casey	caseyc6
Martin Ivanov	ivanom4
Gurleen Dhillon	dhillg25
Qisheng Thomas Wang	wangq157

## MILESTONE 2 (STAGE 1) – REFINED CONCEPT SKETCHES (MODELLING SUB-TEAM)

Team Number: 

Mon-30
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You should have already completed this task individually prior to Design Studio 8.

1. Copy-and-paste each sub-team member's refined sketch on the following pages (1 sketch per page)  
→ Be sure to indicate each team member's Name and MacID

We are asking that you submit your work on both worksheets. It does seem redundant, but there are valid reasons for this:

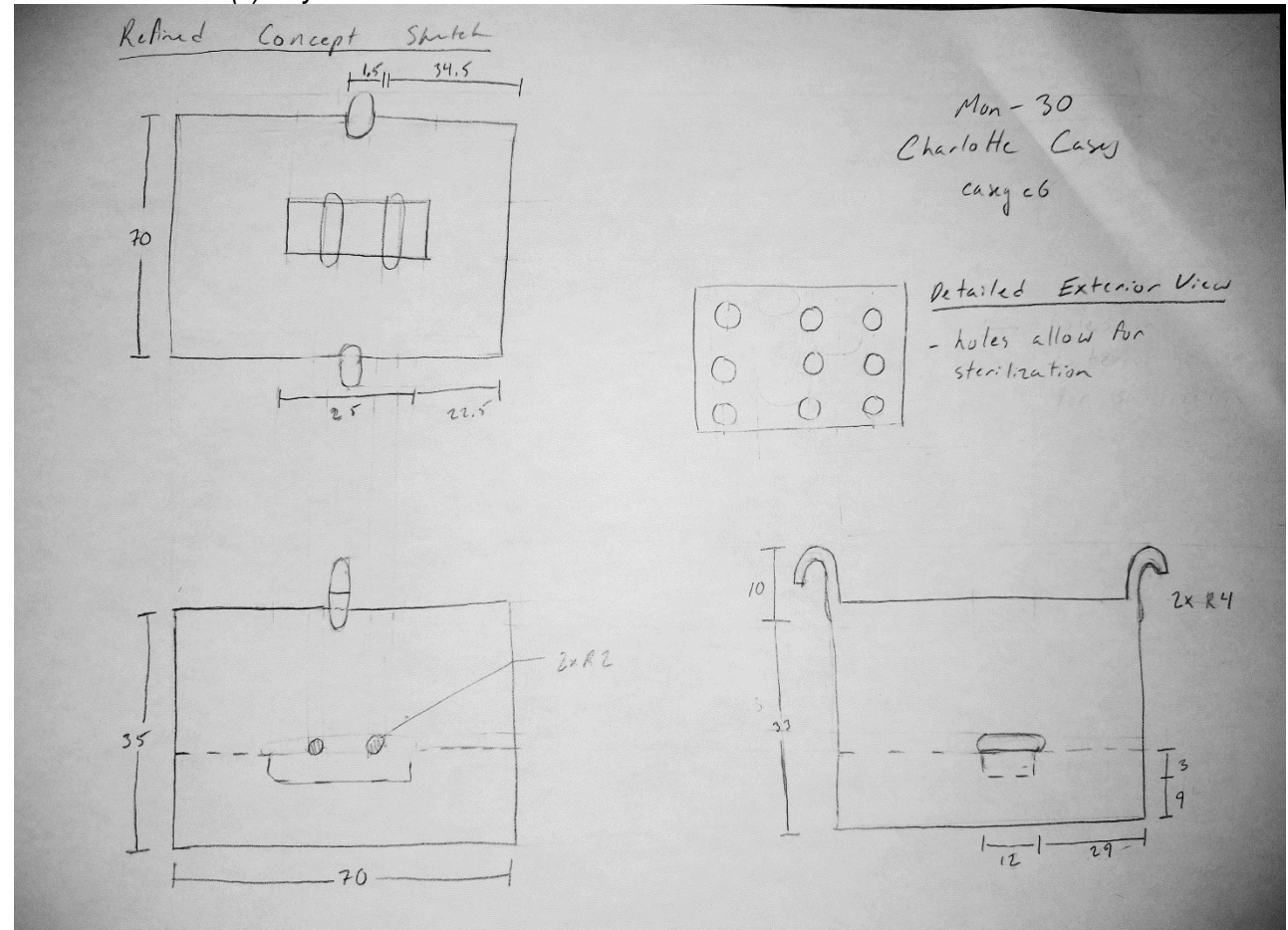
- Each team member needs to submit their refined concept sketches with the **Milestone Two Individual Worksheets** document so that it can be *graded*
- Compiling your individual work into this **Milestone Two Team Worksheets** document allows you to readily access your team member's work
  - This will be especially helpful when completing **Stage 3** of the milestone

Team Number: Mon-30

Name: Charlotte Casey

MacID: caseyc6

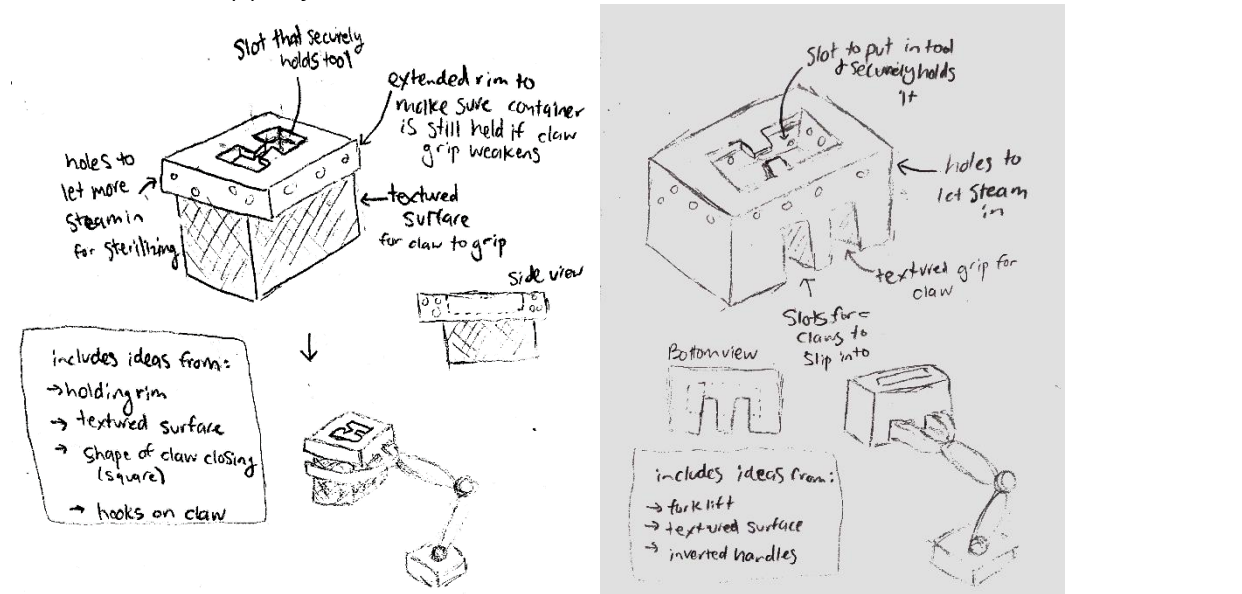
Insert screenshot(s) of your refined sketches below



Name: Gurleen Dhillon

MacID: dhilg25

Insert screenshot(s) of your refined sketches below



\*If you are in a sub-team of 3, please copy and paste the above on a new page

## MILESTONE 2 (STAGE 2) – COMPUTER PROGRAM WORKFLOW (COMPUTATION SUB-TEAM)

Team Number: 

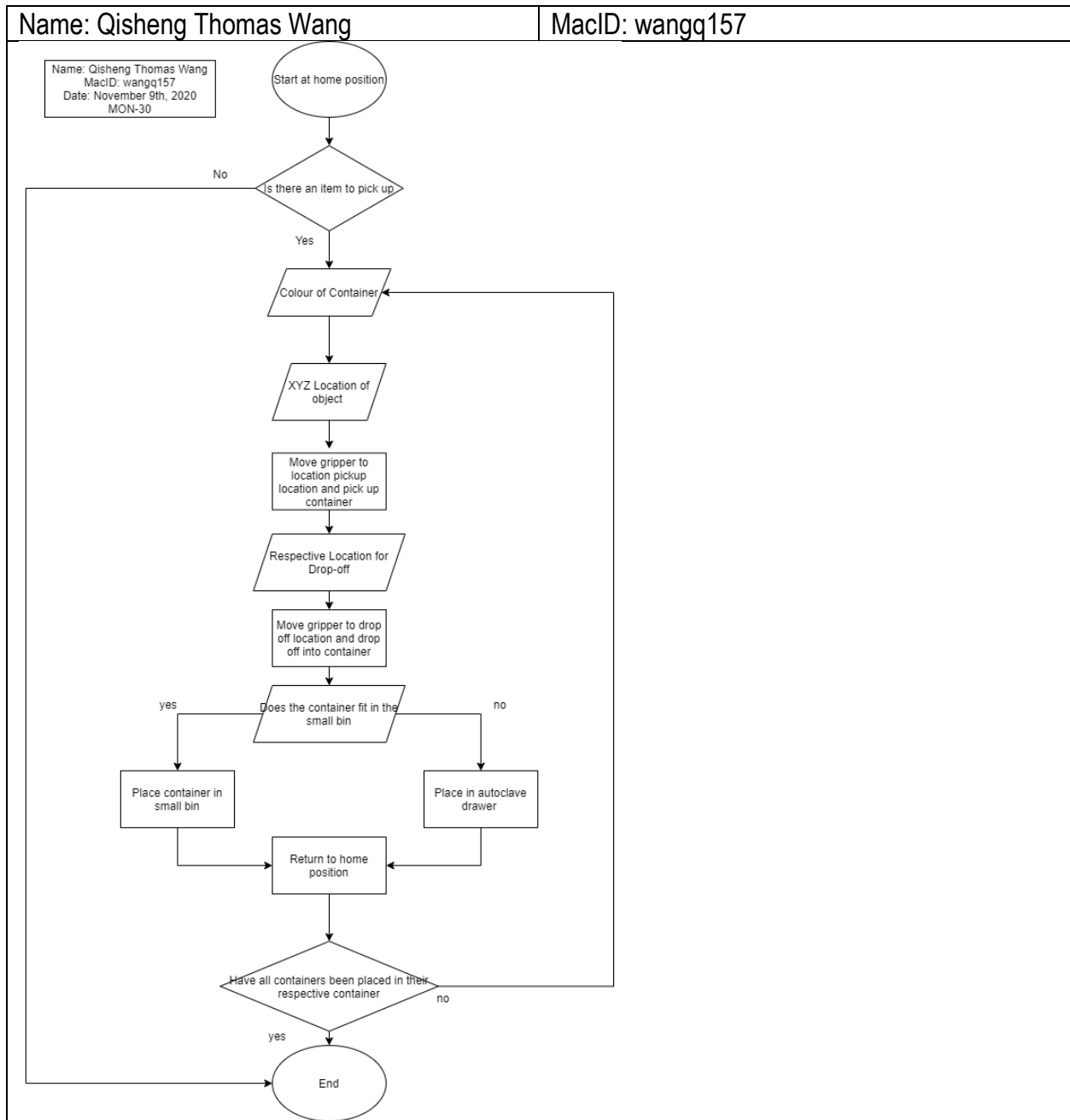
Mon-30
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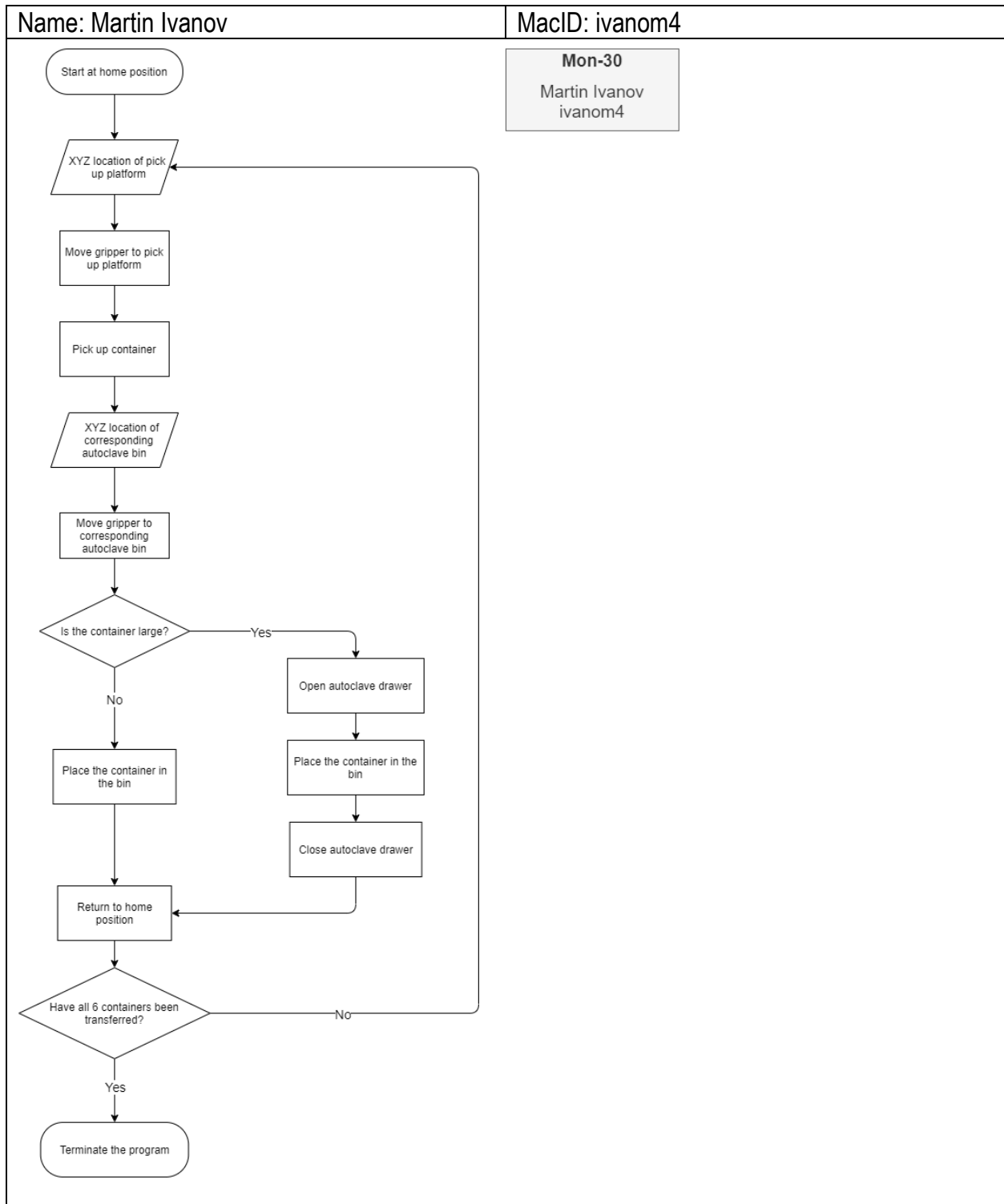
You should have already completed this task individually prior to Design Studio 8.

1. Copy-and-paste each team member's storyboard or flowchart sketches on the following pages (1 team member per page)  
→ Be sure to indicate each team member's Name and MacID

We are asking that you submit your work on both worksheets. It does seem redundant, but there are valid reasons for this:

- Each team member needs to submit their storyboard/flowchart with the **Milestone Two Individual Worksheets** document so that it can be *graded*
- Compiling your individual work into this **Milestone Two Team Worksheets** document allows you to readily access your team member's work
  - This will be especially helpful when completing **Stage 4** of the milestone





## MILESTONE 2 (STAGE 3A) – LOW-FIDELITY PROTOTYPE (MODELLING SUB-TEAM)

Team Number: 

Mon-30
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Complete this worksheet during design studio 8 after creating the low-fidelity prototypes.

1. Take multiple photos of your low-fidelity prototypes  
→ Include an index card (or similar) next to the prototype, clearly indicating your Team Number, Name and MacID on each sketch
2. Insert your photo(s) as a Picture (Insert > Picture > This Device)
3. **Do not include more than two prototype photo's per page**

Make sure to include photos of <u>each</u> team member's prototype
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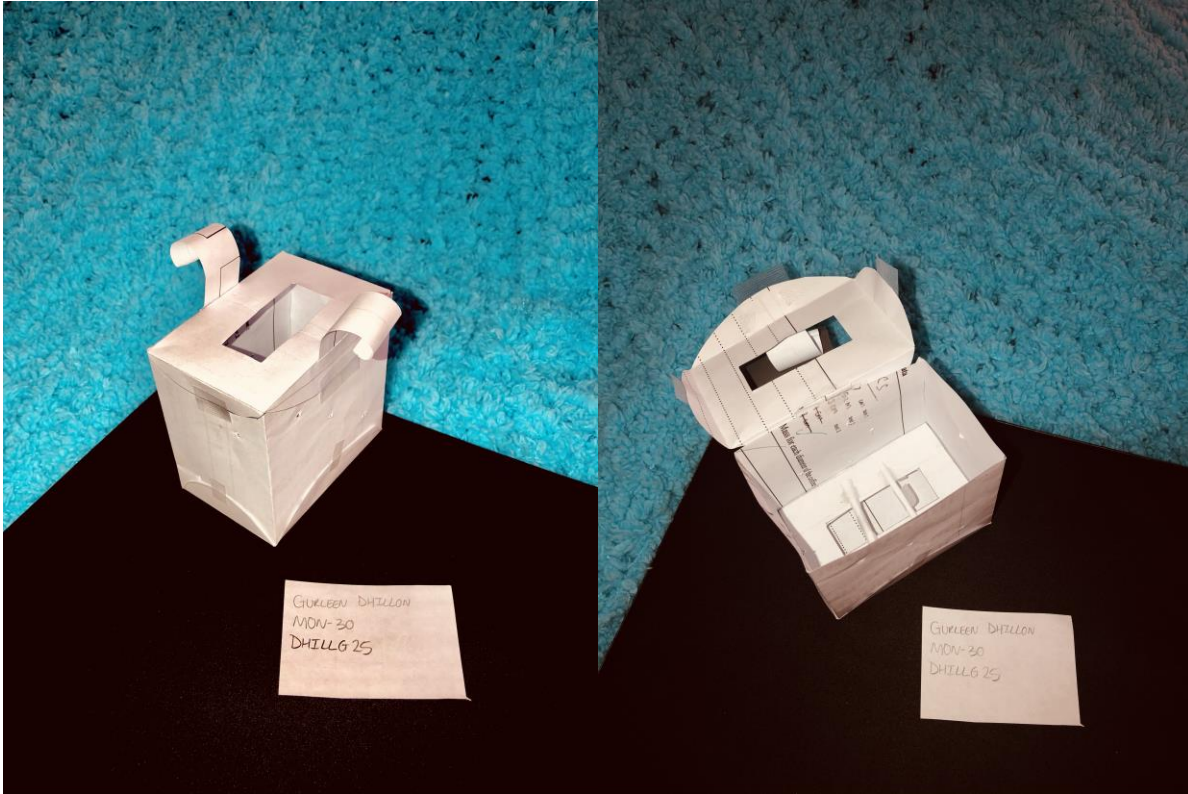


Team Number: Mon-30

Name: Gurleen Dhillon

MacID: dhillg25

*Insert screenshot(s) of your low-fidelity prototype below*  
Prototype 2:



Team Number:

Mon-30

Name: Charlotte Casey

MacID: caseyc6

Prototype 1:



Team Number: Mon-30

Name: Charlotte Casey

MacID: caseyc6

*Insert screenshot(s) of your low-fidelity prototype below*



\*If you are in a sub-team of 3, please copy and paste the above on a new page

## MILESTONE 2 (STAGE 3B) – LOW-FIDELITY PROTOTYPE OBSERVATIONS (MODELLING SUB-TEAM)

Team Number: Mon-30

As a team, document your observations for each low-fidelity prototype. Make sure to label your observations to indicate which prototype it belongs to. As a starting, consider the following: (note, this does not fully encompass all discussion points)

- Advantages and disadvantages of each prototype
- Extent to which each concept aligns (or does not align) with the List of Objectives, Constraints, and Functions you came up with for Milestone 1
- Reliability of the design in picking up the surgical tool
- Reliability of the design in securing the surgical tool
- Extent to which it allows for tool sterilization

<i>Attribute</i>	<i>Prototype 1</i>	<i>Prototype 2</i>
Similarities	<ul style="list-style-type: none"> <li>- Rectangular/ cubic box shape</li> <li>- Slot in box for containing the tools</li> </ul>	
Differences	<ul style="list-style-type: none"> <li>- Removable lid</li> <li>- Textured surface (not depicted in model)</li> <li>- Multiple methods of securing the container within the gripper (textured surface, rim)</li> </ul>	<ul style="list-style-type: none"> <li>- Hooks that extend from the top</li> <li>- Exterior is largely featureless</li> </ul>
Advantages	<ul style="list-style-type: none"> <li>- Multiple methods of securing the container provide additional security</li> <li>- Can be manipulated by the grabber from several angles</li> </ul>	<ul style="list-style-type: none"> <li>- Secures tool with bars and indent</li> <li>- Can securely hold container (2 hooks), and can be held by 1 hook if the other breaks</li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>- May waste a lot of materials when building</li> </ul>	<ul style="list-style-type: none"> <li>- Hooks may be difficult to latch onto with the grabber</li> <li>- Grabber must operate in a very specific motion</li> </ul>

		<ul style="list-style-type: none"> <li>- Hooks may take up extra vertical space in the autoclave</li> </ul>
Alignment with Constraints	Aligns with constraints designated for container	Aligns with constraints designated for the container
Reliability in picking up tool	Very reliable	Very reliable
Reliability in securing the tool	Secures tool very well	Secures tool well (hinged bars)
Extent to which it allows for sterilization	Holes allow sterilization (not depicted in prototype)	Holes allow sterilization

## MILESTONE 2 (STAGE 4A) – WORKFLOW PEER-REVIEW (COMPUTATION SUB-TEAM)

Team Number: Mon-30

As a team, document your observations, specifically any similarities and differences between each team member's visual storyboard or flowchart in the table below.

<i>Similarities</i>	<i>Differences</i>
Both identified that required locations for pick up and drop off are inputs to the code	Checking if the next container should be picked up at the beginning vs the end
Start and ended in home position	Whether or not autoclave drawer was needed was quantified as "container being large or small" vs "whether it can fit in the small bin or not (can't fit in small bin means must place in autoclave drawer)"
Boolean operator throughout the workflow diagram (whether something is True/False - aka Yes/No)	One is looped so that the cycle repeats until 6 items have been sorted (for loop – for i in range 6) vs while there is item to pick up, run the code (while item is identified for pickup at location XYZ, execute the code)
Both achieve all functions/objectives of the program	Some steps are combined such as the movement and the pickup vs having steps all separate

### *Recommendations/General Feedback:*

- *Using a loop is better because it avoids issues regarding the code running infinitely (set the range of I values to be the desired number). This also helps mitigate any issue of overflow in the bin or drawer.*
- *Using more objective way of identifying the object's size: does the object fit into the smaller bin Yes or No (whether it can fit into the small bin – thus being able to fit in the small bin indicates that the autoclave drawer isn't needed. If container can't fit in small bin, autoclave drawer must be used)*
- *Should be more explicit mention of the colour of the container*
- *Keep steps of the workflow concise but not too general*

## MILESTONE 2 (STAGE 4B) – PROGRAM PSEUDOCODE (COMPUTATION SUB-TEAM)

Team Number: Mon-30

As a team, write out a pseudocode outlining the high-level workflow of your computer program in the space below.

1. Identify if there is a box to pick up
2. Classify the colour of the container
3. Analyze whether it satisfies the condition of fitting in the smaller bin (if it needs to be placed in the autoclave drawer)
4. Pick up the container with the gripping arm
5. Move arm to respective colour drop off location
6. Place in small bin if autoclave isn't needed, otherwise open autoclave drawer and place container inside then close the drawer
7. Return gripping arm back to home location
8. Repeat steps 1-7 until there is no more containers to pick up