PROJECT TWO: MILESTONE 3 – COVER PAGE

Team Number: Mon-30

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

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

MILESTONE 3 (STAGE 1) – PRELIMINARY SOLID MODEL (MODELLING SUB-TEAM)

Team Number: Mon-30

You should have already completed this task individually prior to Design Studio 9.

1. Copy-and-paste each team member's screenshots of their preliminary solid model on the following pages (1 team member per page)
   → Be sure to clearly indicate who each model belongs to

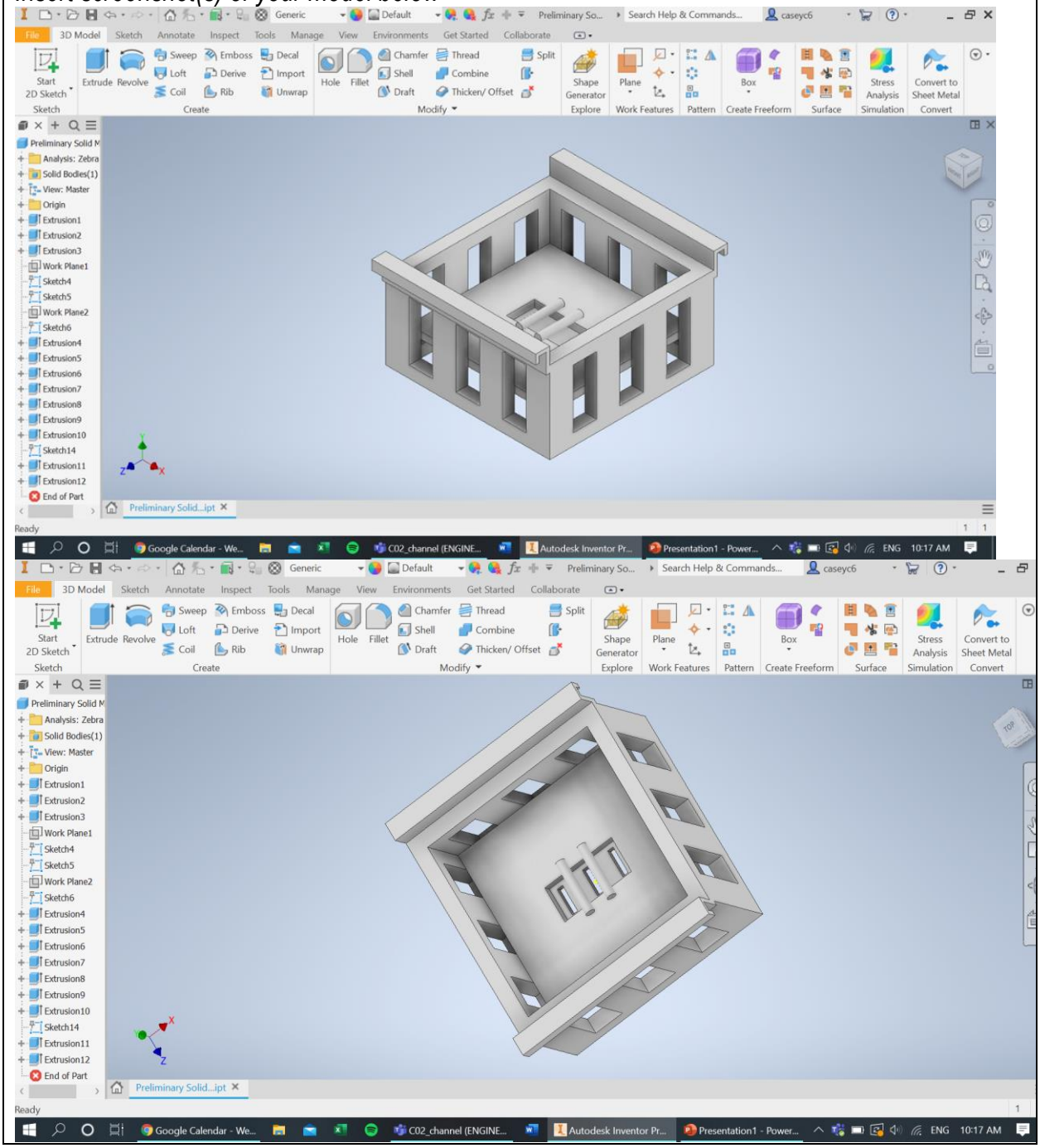
We are asking that you submit your work on both worksheets. It does seem redundant, but there are valid reasons for this:

- Each team member needs to submit their solid model screenshots with the **Milestone Three Individual Worksheets** document so that it can be ***graded***
- Compiling your individual work into this **Milestone Three 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

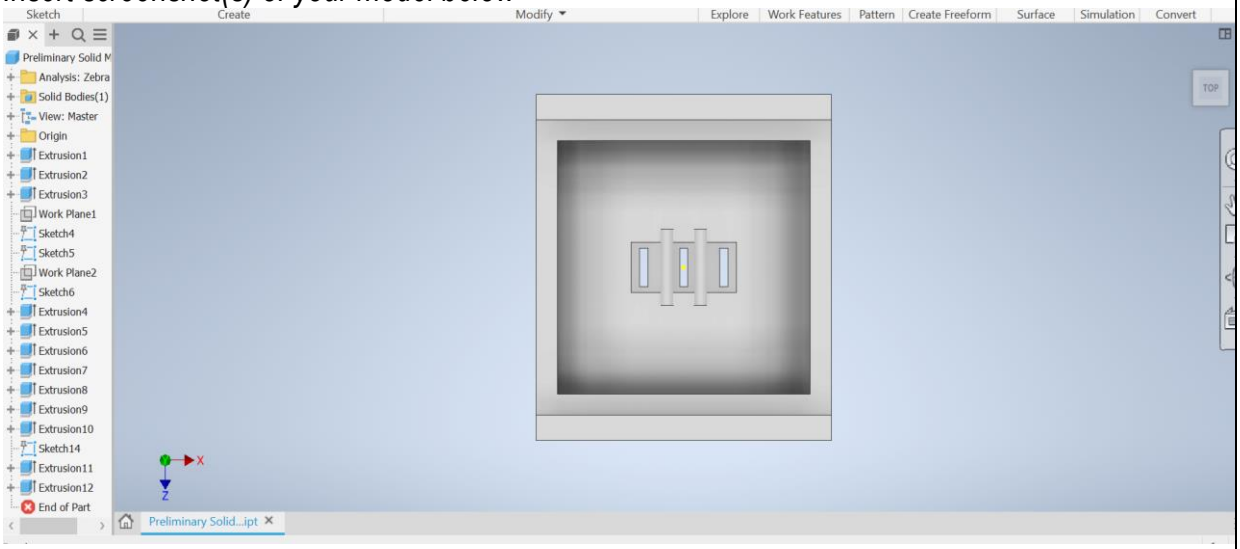
Insert screenshot(s) of your model below

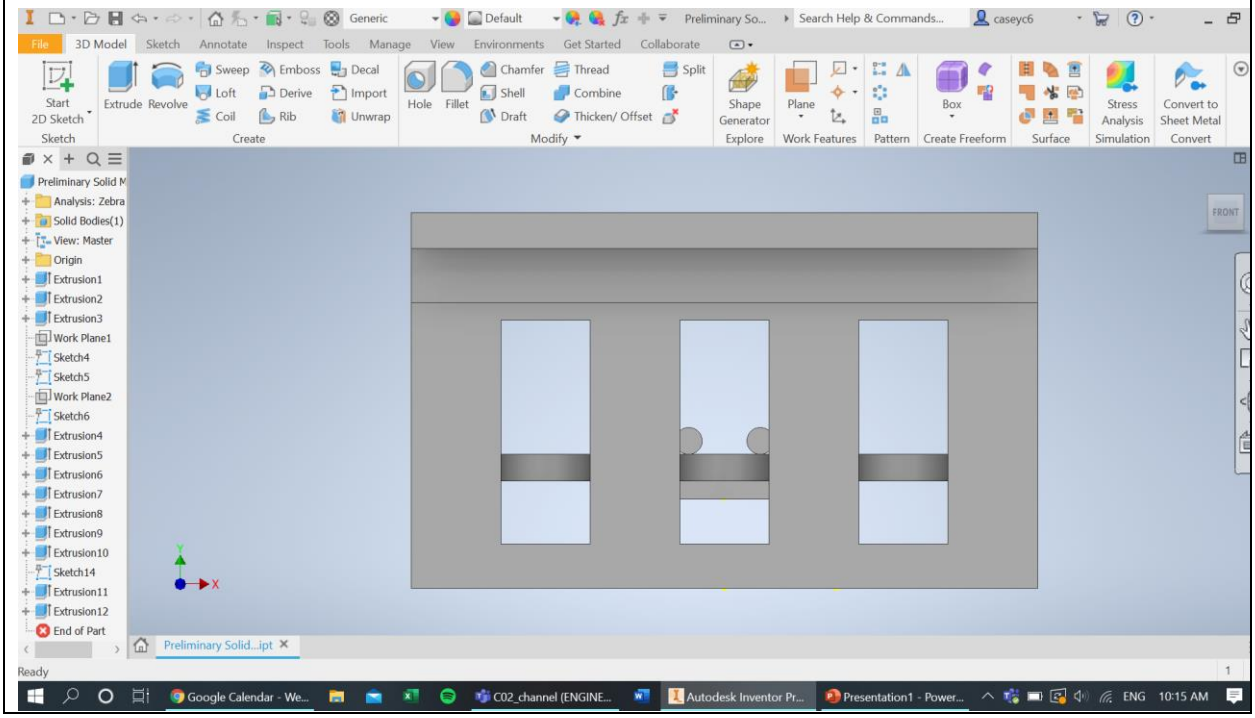


Team Number: Mon-30

Name: Charlotte Casey	MacID: Charlotte Casey

Insert screenshot(s) of your model below





*Limit screenshots to no more than 2 per page. For additional screenshots, please copy and paste the above on a new page

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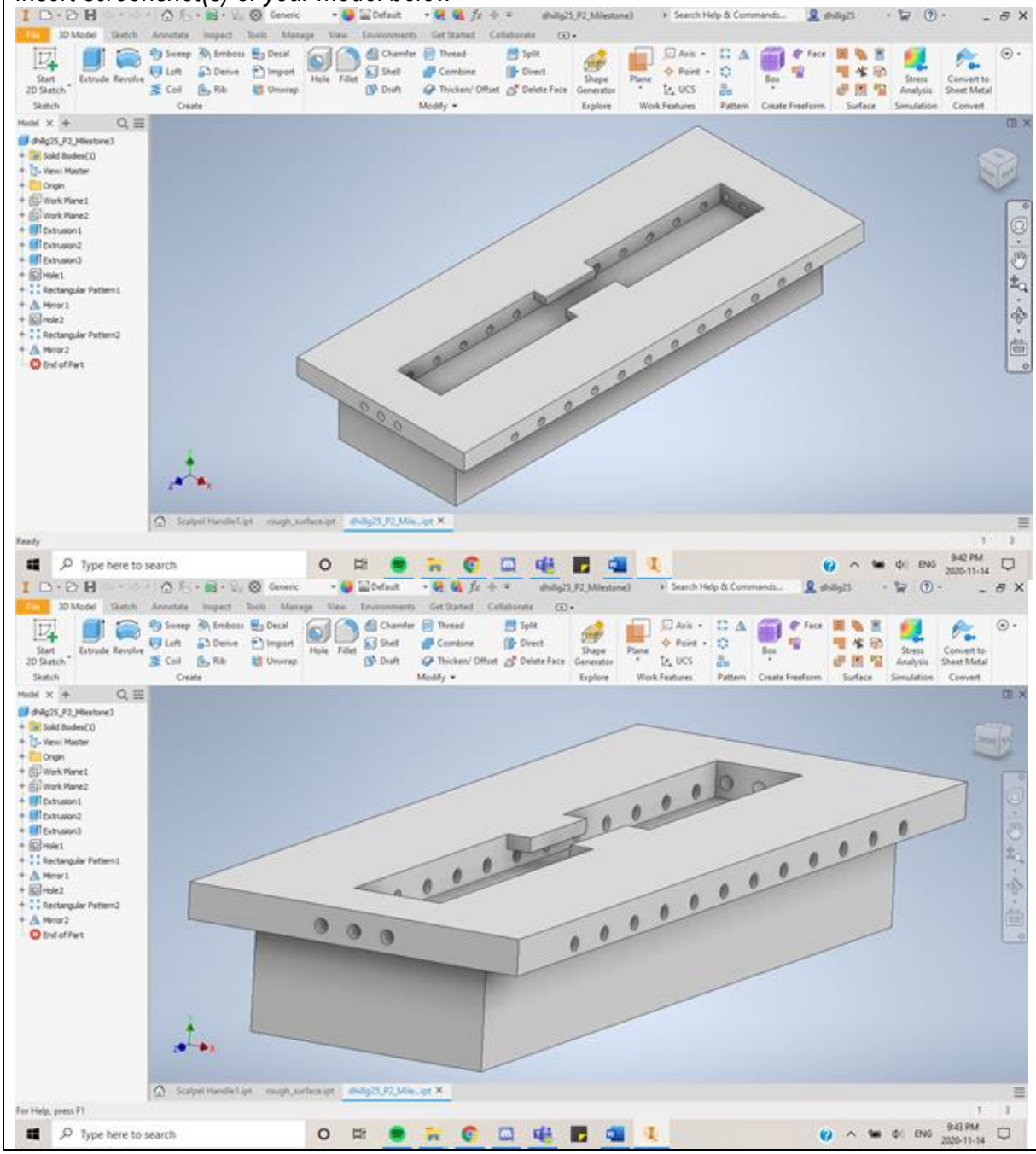
Team Number: Mon-30

Name: Gurleen Dhillon	MacID: dhillg25

Insert screenshot(s) of your model below



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

MILESTONE 3 (STAGE 2) – PRELIMINARY PROGRAM TASKS (COMPUTATION SUB-TEAM)

Team Number: Mon-30

You should have already completed this task individually prior to Design Studio 9.

1. Copy-and-paste each team member's code screenshots on the following pages (1 team member per page)
   → Be sure to clearly indicate who each code belongs to

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 code screenshots with the **Milestone Three Individual Worksheets** document so that it can be ***graded***
- Compiling your individual work into this **Milestone Three 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

Team Number: Mon-30

Name: Martin Ivanov	MacID: ivanom4

```python
## Name: Martin Ivanov
## macID: ivanom4

def identify_location(container_id):
    if container_id == 1:
        target_location = [-0.6181, 0.225, 0.3855]
    elif container_id == 2:
        target_location = [0.0, -0.6578, 0.3855]
    elif container_id == 3:
        target_location = [0.0, 0.6578, 0.3855]
    elif container_id == 4:
        target_location = [-0.4269, 0.1554, 0.172]
    elif container_id == 5:
        target_location = [0.0, -0.4444, 0.156]
    elif container_id == 6:
        target_location = [0.0, 0.4443, 0.156]
    else:
        print("Invalid constainer ID. Target set to home position")
        target_location = [0.4064, 0, 0.4826]
    return target_location
```

Team Number: Mon-30

Name: Qisheng Thomas Wang	MacID: wangq157

```python
#Name: Qisheng Thomas Wang
#MacID: wangq157
def move_end_effector(target_location):
    threshold = 0
    print("Flex muscles to tell arm what to do!")
    if arm.emg_left() > threshold and arm.emg_right() == arm.emg_left():
        arm.move_arm(0,4064,0,0.4826) #home location
    elif arm.emg_left() > threshold and arm.emg_right() == 0
        arm.move_arm(0.5304, 0.0, 0.0257) #pickup location
    elif arm.emg_right() > threshold and arm.emg_left() == 0:
        arm.move_arm(target_location[0],target_location[1],target_location[2])
    else:
        print("Please flex your muscles") #awaiting further instruction
```

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

MILESTONE 3 (STAGE 3) – PUGH MATRIX (MODELLING SUB-TEAM)

Team Number: Mon-30

1. As a team, evaluate your designs for the sterilization container in the table below
   → List your Criteria in the first column
      - You should include a minimum of 5 criteria
   → Fill out the table below, comparing your designs against the given baseline
      - Replace "Design A" and "Design B" with more descriptive labels (e.g., a distinguishing feature or the name of the student author)
      - Assign the datum as the baseline for comparison
      - Indicate a "+" if a concept is better than the baseline, a "–" if a concept is worse, or a "S" if a concept is the same

	Datum	**Handles (Charlotte)**	**Textured sides (Gurleen)**
Facilitate sterilization effectively	S	S	S
Facilitate manipulation by the q- arm gripper	S	S	+
Stabilize tool	S	S	S
Lightweight	S	S	-
Minimize maintenance (no hard to clean corners)	S	-	S
Maximize durability	S	S	S
Minimization of material usage	S	S	-
Total +	0	0	1
Total –	0	1	2
Total Score	0	-1	-1

2. Propose one or more suggested design refinements moving forward

Handle design: Sterilization could be improved by adding holes to the interior walls of the basin meant to secure the tools, thereby allowing more steam to reach the tool. Additionally, handles could be added to the other sides to allow for the gripper to pick up the container from more angles. Corners can be rounded to minimize maintenance efforts.
Textured sides: 1. fix measurements to fit the 4mm constraint and footprint

2. make the texture block hollow to minimize material usage and allow sterilization from bottom
3. make textures visible and round corners in the cad model

MILESTONE 3 (STAGE 4A) – CODE PEER-REVIEW (COMPUTATION SUB-TEAM)

Team Number: Mon-30

Document any errors and/or observations for each team member's preliminary Python program in the space below

Identify Autoclave Bin Location Task	**Team Member Name**: Martin Ivanov
• *Add comments to identify colour and size of each container ID* • *Included else for if invalid container ID is entered* • *Identified all drop off bin locations* • *Gave coordinates according to give ID's* • *Potentially add more descriptive comments to tell reader which step is which (although it is already very concise and clear)*	
Move End-Effector Task	**Team Member Name**: Thomas Wang
• *Identify locations more effectively* • *Threshold variable is declared inside the function* • *Gave user instruction to make the program easier to use* • *Potentially add more descriptive comments to make code easier to understand and interpret for readers* • *Passed a variable into the function from external code*	

MILESTONE 3 (STAGE 4B) – PROGRAM TASK PSEUDOCODE (COMPUTATION SUB-TEAM)

Team Number: Mon-30

As a team, write out the pseudocode for each of the *remaining* tasks in your computer program in the space below.

Control Gripper

1. Input whether the arm needs to pick up or drop off a container.
2. If the arm is picking up a container, tighten the gripper in the positive direction to grab hold of the object.
3. Otherwise, if the arm is dropping off the container then loosen the gripper in the negative direction to release the object.
4. If the gripper is done dropping off an object, return the gripper to initial gripping position (non-tightened)

Open Autoclave Bin Drawer

1. Input container ID
2. Identify the object's size and colour
3. Output whether autoclave drawer should open and the colour on screen
4. If container is small, do not open autoclave drawer
5. Otherwise, container is large thus open the autoclave drawer with the corresponding colour
6. After object has been placed, close autoclave drawer

Continue or Terminate

1. Input cumulative number of containers that have been picked up
2. If number of repetitions is less than 6, continue
3. If number of repetitions is equal to 6, return to home position and terminate