PROJECT TWO: MILESTONE 3 – COVER PAGE

Team Number: Tues 23

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

Full Name:	MacID:
Adiyan Ahmed	ahmea45
Borna Sadeghi	sadegb1
Aldraech Liac	liaca
Josh Suh	suhj13

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

Team Number: Tues 23

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

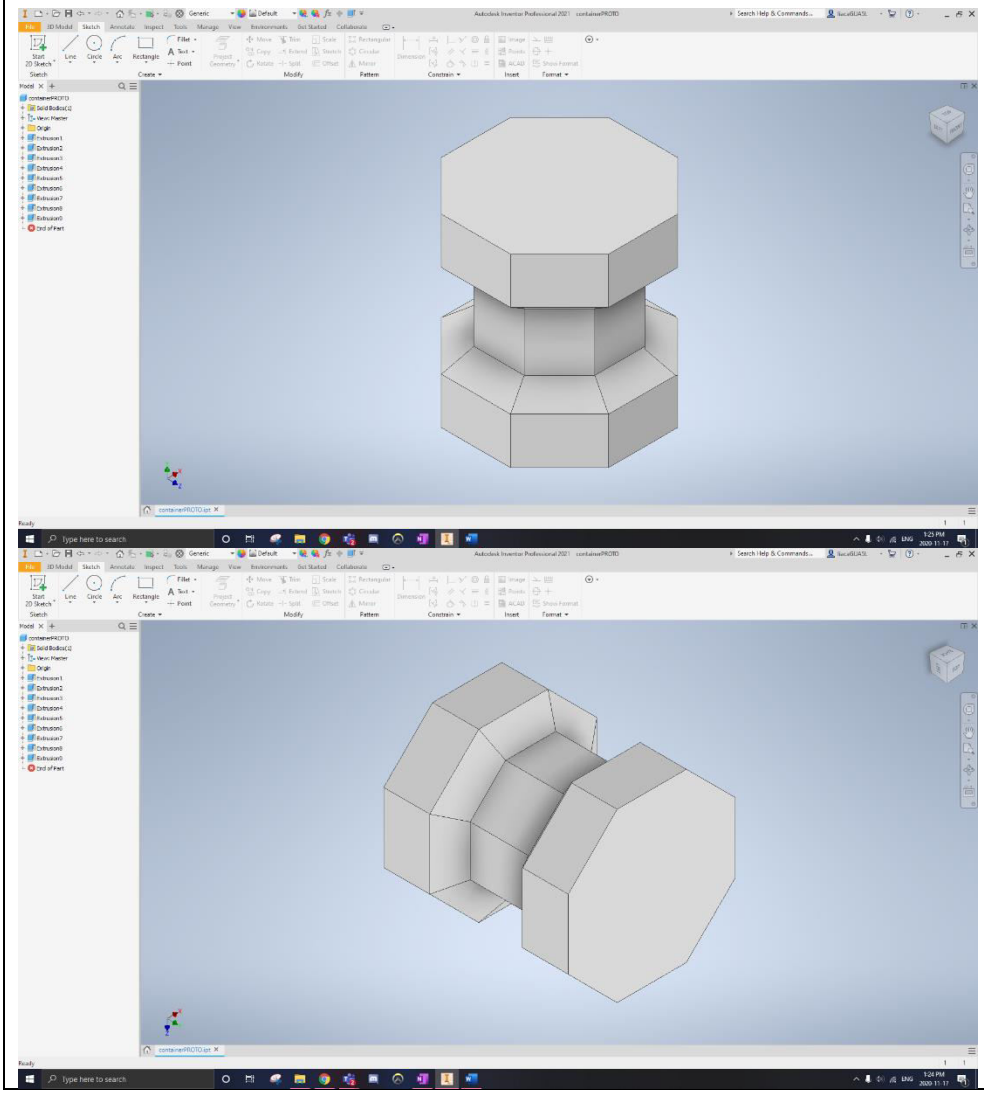
1. Copy-and-paste each team member's screenshots of their preliminary solid model on the following pages (1 team member per page)
   → Be sure to clearly indicate who each model belongs to

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: Tues 23

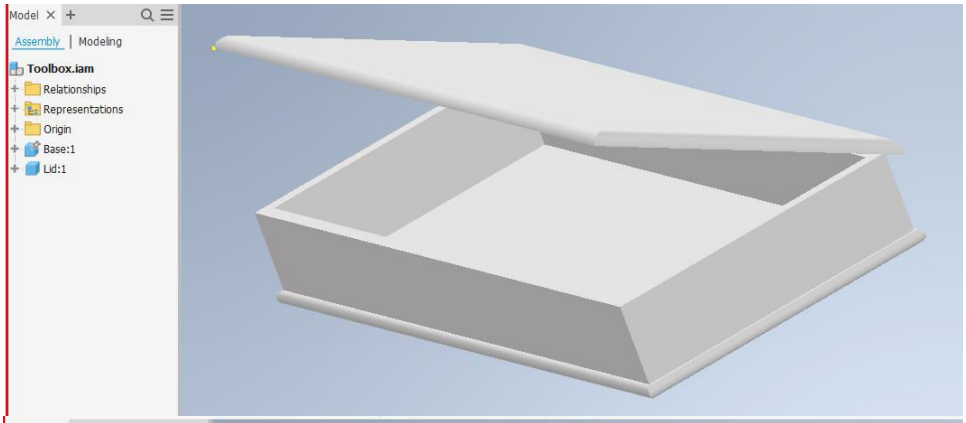
Name:Aldraech Liac	MacID liaca

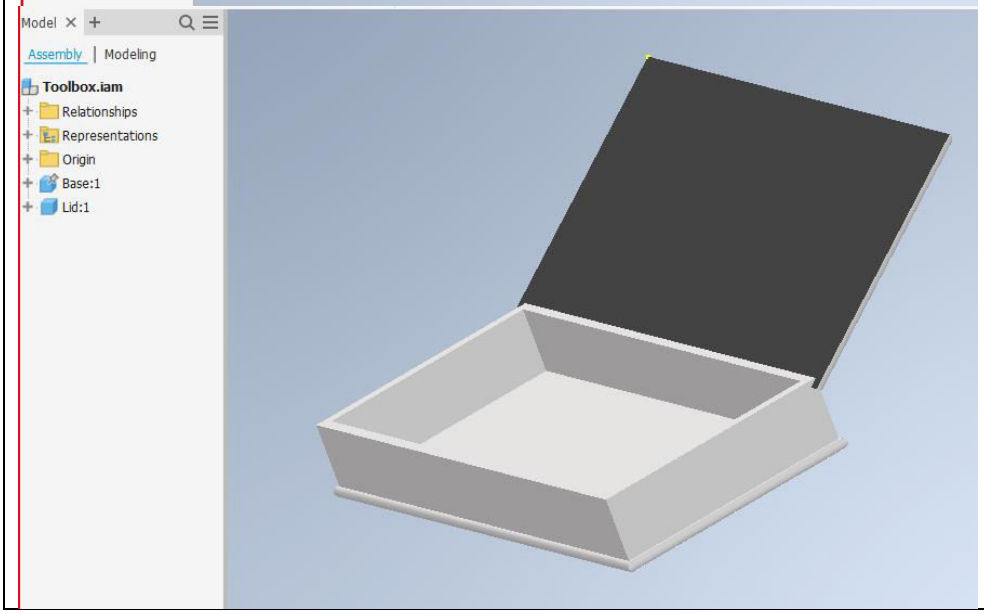


Team Number: Tues 23

Name: Borna Sadeghi	MacID: sadegb1

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: Tues 23

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: Tues 23

Name: Josh Suh	MacID: suhj13
Insert a screenshot of your code below	

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

```
## STUDENT CODE BEGINS
## ----------------------------------------------------------------------------------------
## Example to rotate the base: arm.rotateBase(90)
def identify_autoclave(container_ID):          #This function is based off user input
    if container_ID == 1:
        position = [-0.6078, 0.2517, 0.3784]
    elif container_ID == 2:
        position = [0.0, -0.6578, 0.3784]
    elif container_ID == 3:
        position = [0.0, 0.6563, 0.343]
    elif container_ID == 4:
        position = [-0.464, 0.1922, 0.2461]
    elif container_ID == 5:
        position = [0.0, -0.4911, 0.2279]
    elif container_ID == 6:
        position = [0.0, 0.5022, 0.2461]
    else:
        position = [0.4064, 0.0, 0.4826]       #Arm moves to home position
    return position
```

Team Number: Tues 23

Name: Adiyan Ahmed	MacID: ahmea45

Insert a screenshot of your code below

```
##ahmea45
##Adiyan A. Ahmed
import sys
sys.path.append('../')

from Common_Libraries.p2_lib import *

import os
from Common_Libraries.repeating_timer_lib import repeating_timer

def update_sim ():
    try:
        arm.ping()
    except Exception as error_update_sim:
        print (error_update_sim)

arm = qarm()

update_thread = repeating_timer(2, update_sim)

def move_end_effector(position): #"position" is a list containing xyz coords
    y = True
    x = False
    #updating emg coordinates until threshold reached
    while y == True:
        sensor = arm.emg_right()
        float(sensor)
        if (sensor >= 0.30):
            y = False
        else:
            y = True

    #move end effector to xyz position once threshold has been cleared
    time.sleep(2)
    arm.move_arm(position[0], position[1], position[2])
    time.sleep(2)

position = [0.0399, -0.456, 0.3858] #test coordinates
move_end_effector(position)
```

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

Team Number: Tues 23

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

	Aldraech's Design	**Borna's Design**
Maximum capacity	-	S
Reliability	S	S
Ease of transport	+	S
Efficiency of sterilization process	-	-
Tool protection	+	+
Durability	+	+
Cost	+	-
Ease of use	-	S
Total +	4	2
Total –	3	2
Total Score	1	0

*For a team of 3, click the top-right corner of the table to "Add a New Column"

2. Propose one or more suggested design refinements moving forward

- The design must maximize the amount of tools that can be sterilized per sterilization. The shape and thickness of the design can optimize this.
- The design must have the same or improve upon the sterilization effectiveness of the already existing design (the datum). This is mainly affected by the shape of the design.
- The design must have a similar or lower cost than the datum assuming they have the same capacity and reliability.

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

Team Number: Tues 23

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**: Josh Suh
Enter code errors and/or observations here *Observations:* - *The function is dependent on the second task where a user will input the ID number of an autoclave and will cause the arm to move to that position* - *The program will return a list that contains the coordinates in the form of [x, y, z]* *Errors:* - *No errors. The program returns the coordinates just fine.*	
Move End-Effector Task	**Team Member Name**: Adiyan Ahmed
Enter code errors and/or observations here *Observations:* - For the muscle sensor input, there should be parameters for keeping the left arm flex at zero. Currently, the function will still run if the left arm is *also* flexed, but it should not. - Left an unused variable in the code (x = false) that should be removed - Otherwise the program works fine *Errors:* - No errors, program works as intended, moves the end effector to the inputted position	

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

Team Number: Tues 23

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

Control Gripper

While emg value of the left arm and right arm have both not reached threshold

    Update the values of both left arm and right arm

If the emg value of both left and right arms have reached the threshold

    If the control gripper is open

        Close control gripper

    If the control gripper is closed

        Open control gripper

Open Autoclave Bin Drawer

Take input of Container ID (function only called for large containers)

while emg value of left arm has not reached threshold *and* emg value of right arm is zero

    Update the value of the left arm emg sensor value

If the emg value of left arm has exceeded the threshold and emg value of right arm is zero

    If the autoclave bin drawer for the corresponding Container ID is closed

        Open the autoclave bin drawer

    If the autoclave bin drawer for the corresponding Container ID is open

        Close the autoclave bin drawer

Continue or Terminate

**top of program

Set a variable to false

While variable is false

    Code

    If all 6 containers have been placed

        Set variable true