EXERCISE 1A & 1B GUIDED SOLUTION

A. To design an A3 template for drawing (See Blackboard→Learning Resources→ LAB→ UNIT 6, page 133 & 134)

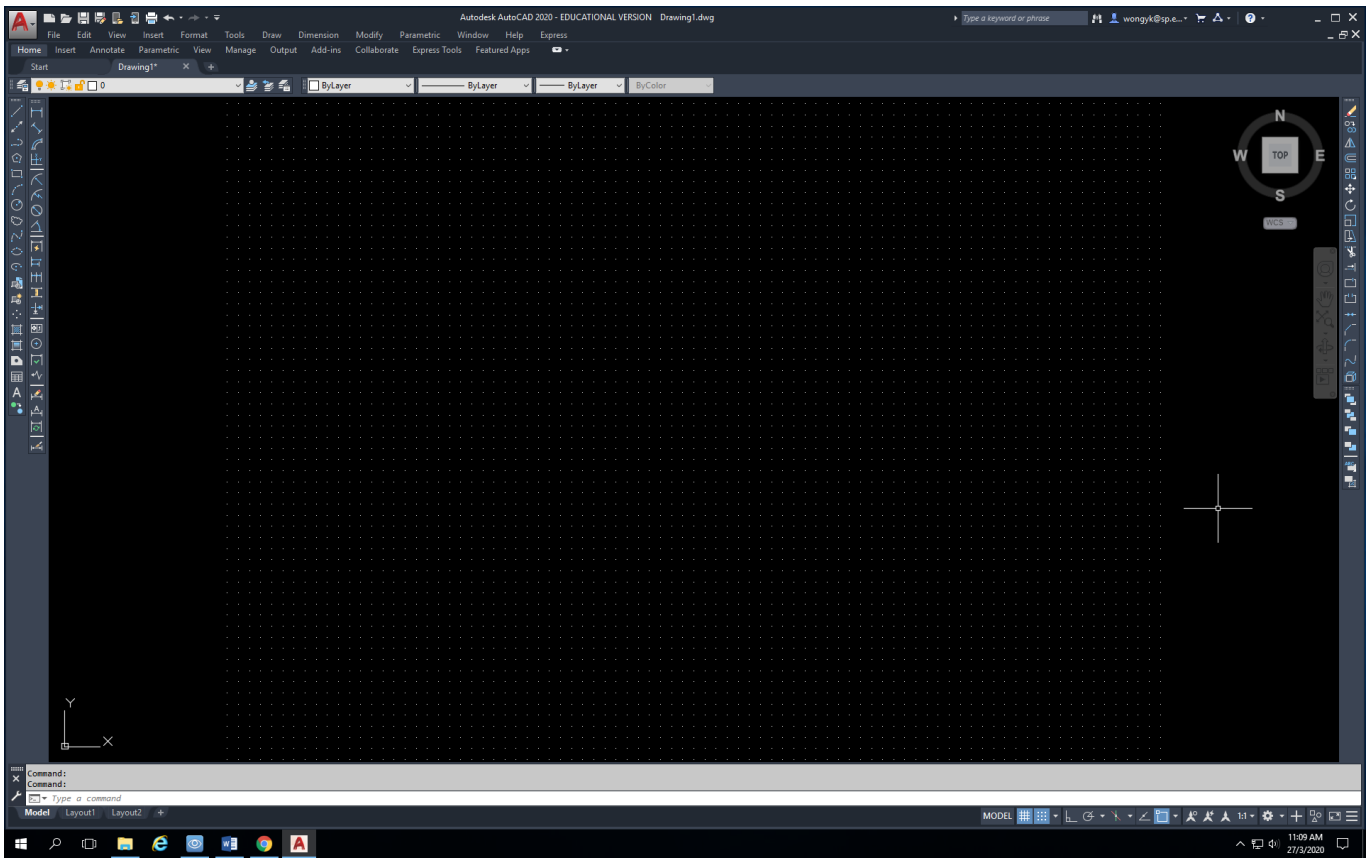

FIG 1

Launch AutoCAD 2020 and do all the 8 settings and insert the 6 frequently used toolbars (See Fig 1) as highlighted in **UNIT 1 & 1A in Blackboard (BB)→ Learning Resources→ LAB** accordingly:

1. **Activate Snap, Grid & Object Snap in Status Toolbar**
2. **Set Grid & Snap spacing, Grid Style, Grid Behaviour according to UNIT 1**
3. **Use Default A3 size workspace. Leave it as A3 size paper (420 mm x 210mm) as shown in Fig 1, so no need to set LIMITS.**
4. **Set Text Style= Times New Roman**
5. **Set Dimension Scale = 1.5 (Keyboard shortcut, Type dimscale in AutoCAD command)**
6. **Set Dimension Style accordingly to UNIT 1**
7. **Set Layers: Text, Dimension, Solid, Center and Hidden according to UNIT 1**
8. **Set Linetype Scale (Keyboard shortcut =lts) = 0.5**

Insert all the **6 frequently used toolbars** shown in **UNIT 1A**:

1. **Draw**
2. **Modify**
3. **Draw Order**
4. **Dimension**
5. **Layers**
6. **Properties**

EXERCISE 1A

Once all these are done, you will be able to do the A3 size drawing template efficiently.

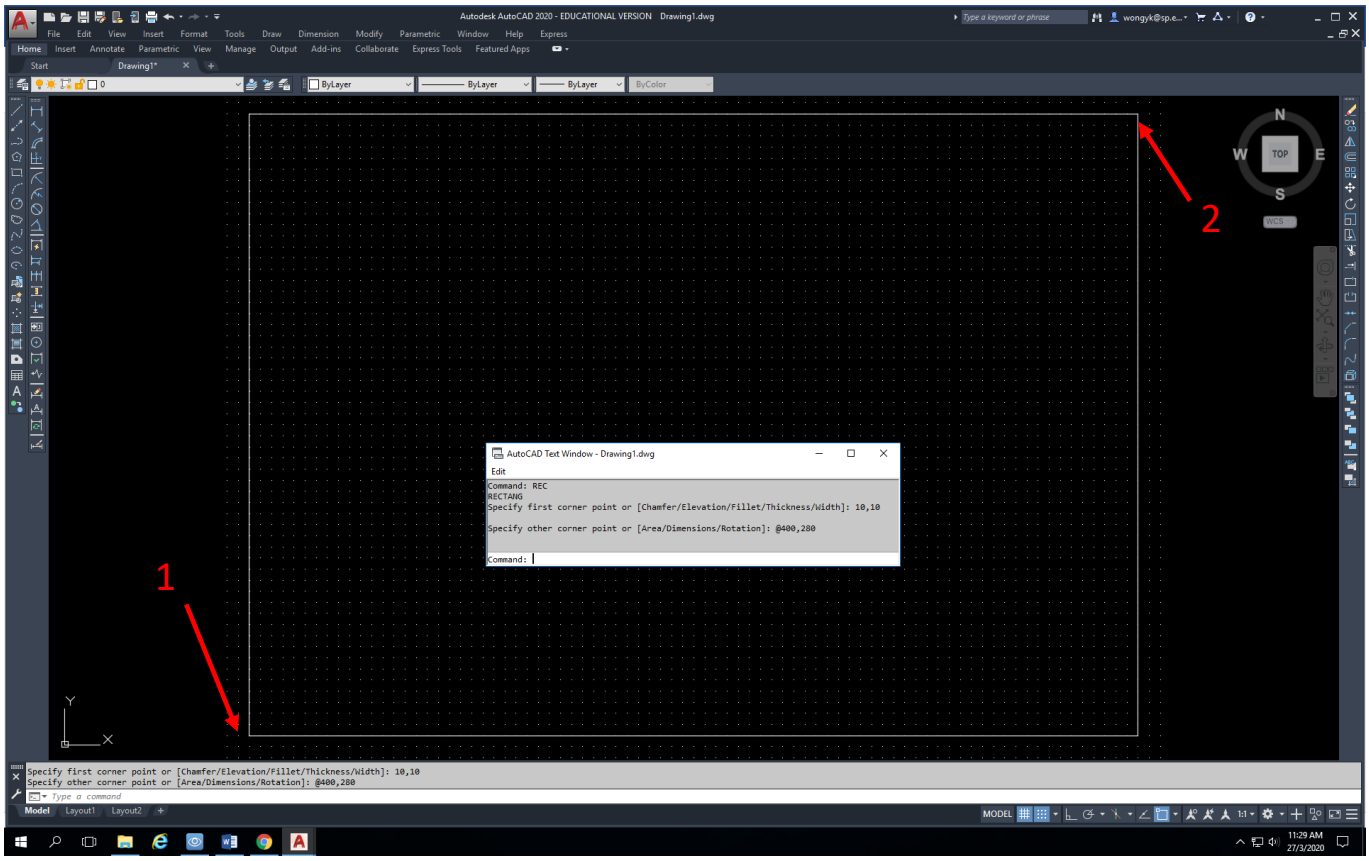

FIG 2

1. First, draw a rectangle using keyboard shortcut, type = **rec,** and **enter**
2. Then key in the parameters 1st corner, type= (**10,10**) **(1)** and other corner, type= (**@400,280) (2)** according to Fig 2
3. The rectangle is called the **Border**.
4. Move the cursor to the rectangle, the whole rectangle is highlighted to represent 1 entity or 1 object.

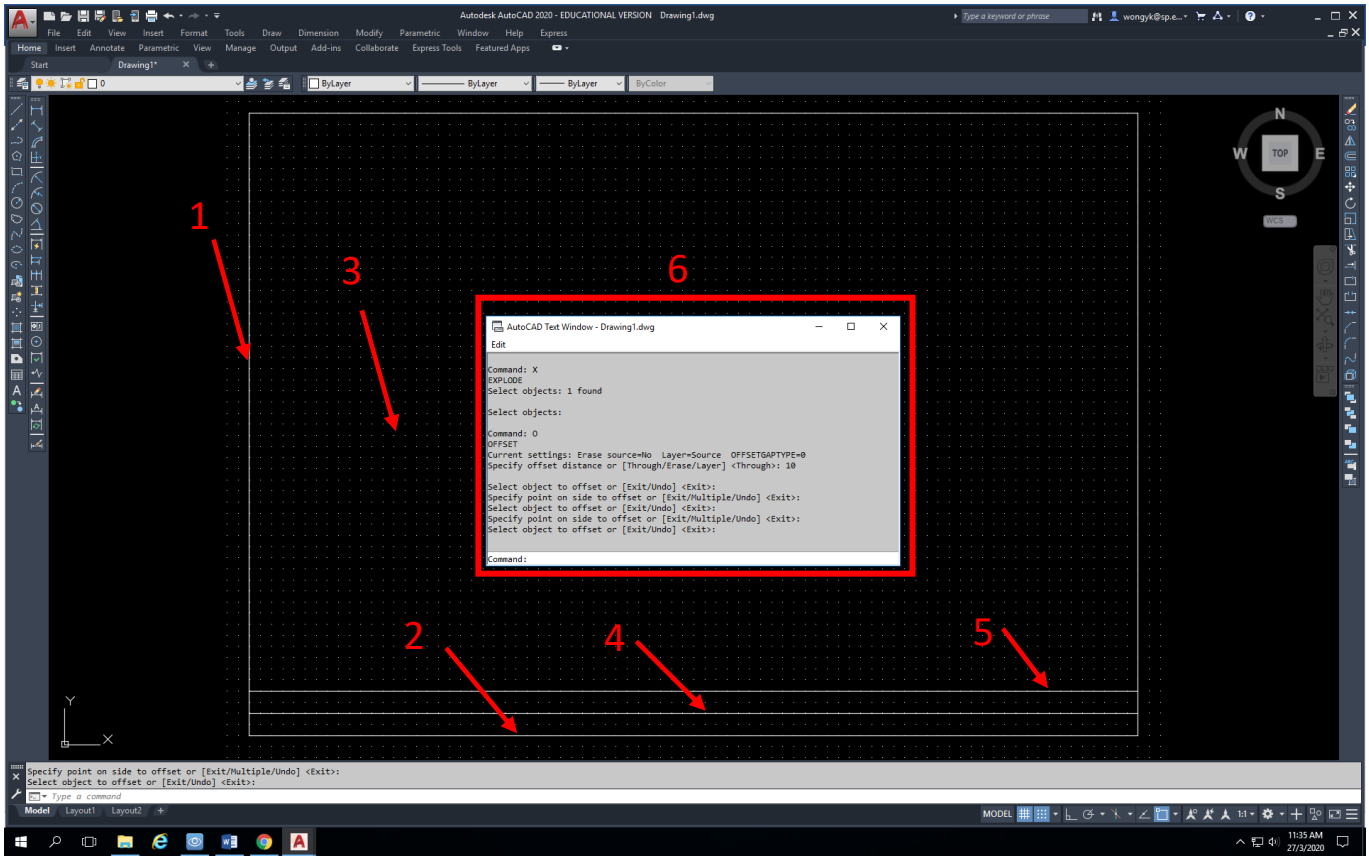

FIG 3

1. The rectangle (Border) **(1)** drawn is one whole object. Modify Command **explode** is used to break-up the whole rectangle into 4 edges so that command offset is used to offset the bottom line of the rectangle with a distance of 10mm.
2. Type= **x** (Keyboard shortcut for explode) in command, then **click on the rectangle (1)** and **enter**. Whole rectangle is now broken up into 4 edges. Move the cursor to one edge and only that edge is highlighted.
3. Next, use the command Offset to duplicate 2 more horizontal lines 10mm apart above the bottom edge of rectangle. Keyboard shortcut for offset=o
4. Method:
    i. Type **o** (Keyboard shortcut for offset)
    ii. Specify offset distance, Type= **10** (Lines created are 10mm apart from one another)
    iii. Select object to offset, click **bottom line of rectangle (2)**
    iv. Specify point of offset, **move cursor anywhere above the bottom line of rectangle and click it with the mouse (3).** A line will appear 10mm **(4)** on top of the bottom rectangular edge.
    v. Continue to produce another line above the created line. Again **click the newly created line and then click anywhere above the newly created line.** Hence, another line is created at the top **(5)** and it will appear 2 horizontal lines 10mm apart above the original bottom horizontal edge of rectangle.
5. Press **F2** key and the command steps appear **(6),** see Fig 3.

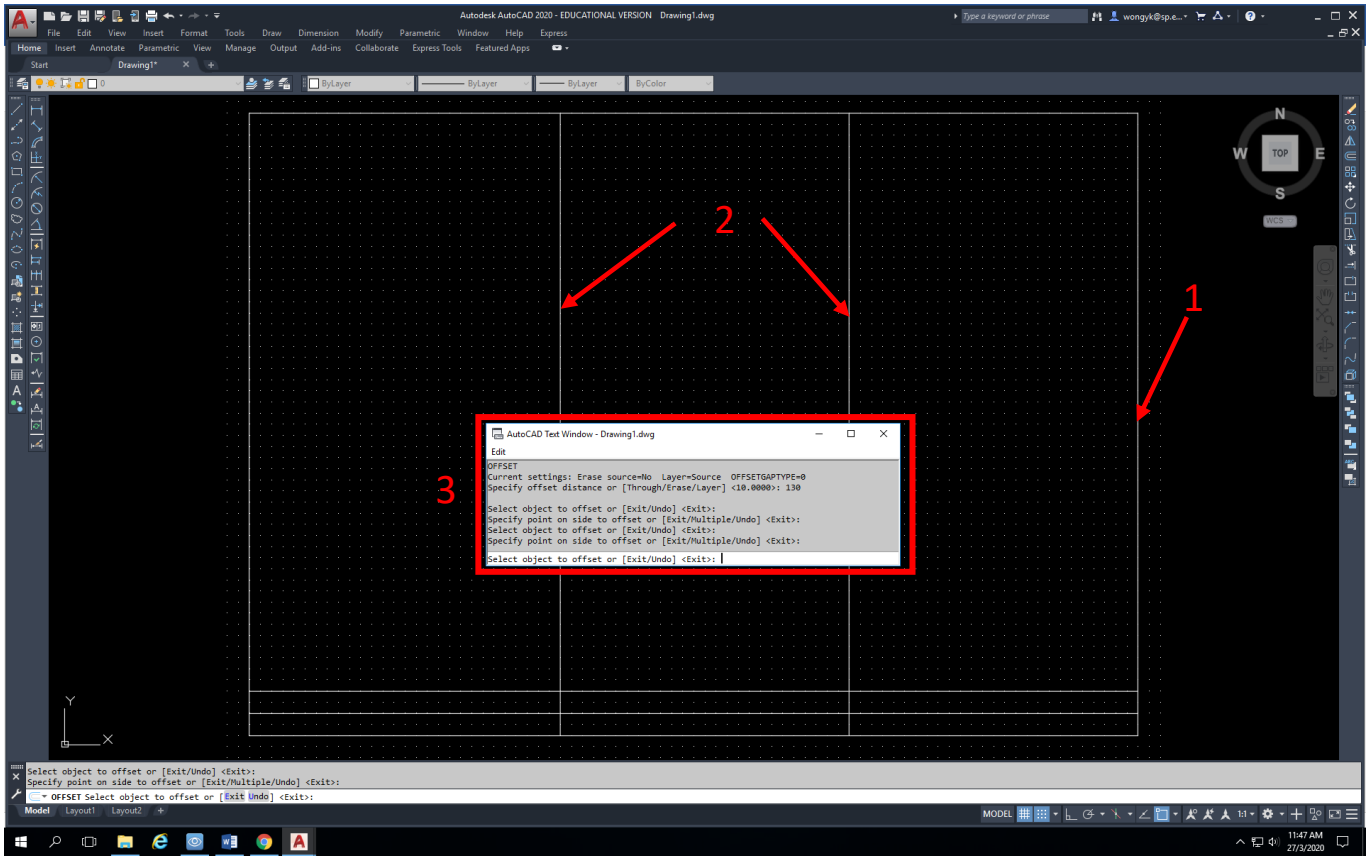

FIG 4

1. Similarly, offset=130mm on the right shorter vertical edge **(1)** of rectangle to duplicate 2 more vertical lines 130mm apart **(2)** towards the left.
2. Press F2 key to see command steps **(3)** as shown in Fig 4

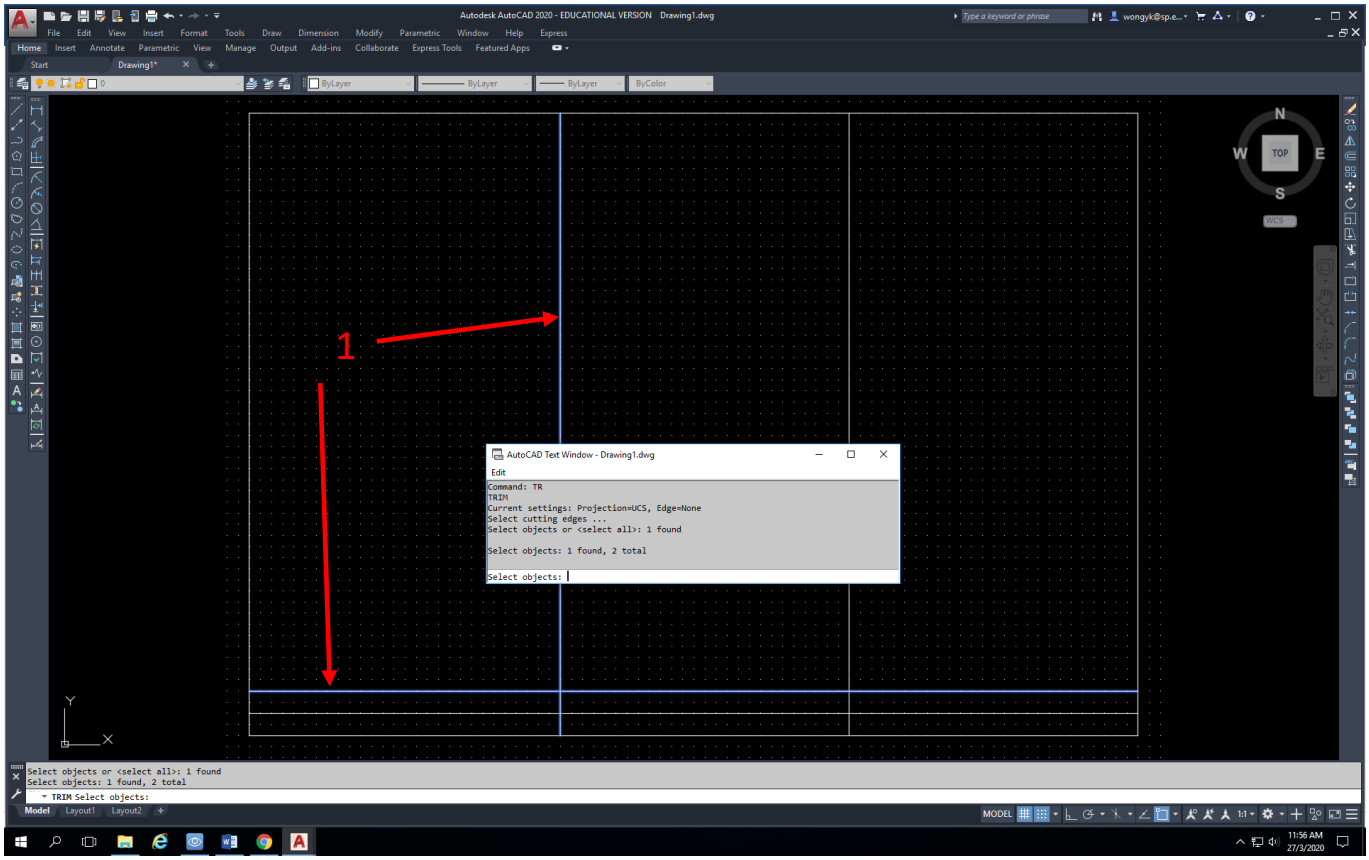

FIG 5

1. Next, Type command Trim, Keyboard shortcut=**tr**
2. Select cutting edges **(1), click on the lines** highlighted in blue in Fig 5

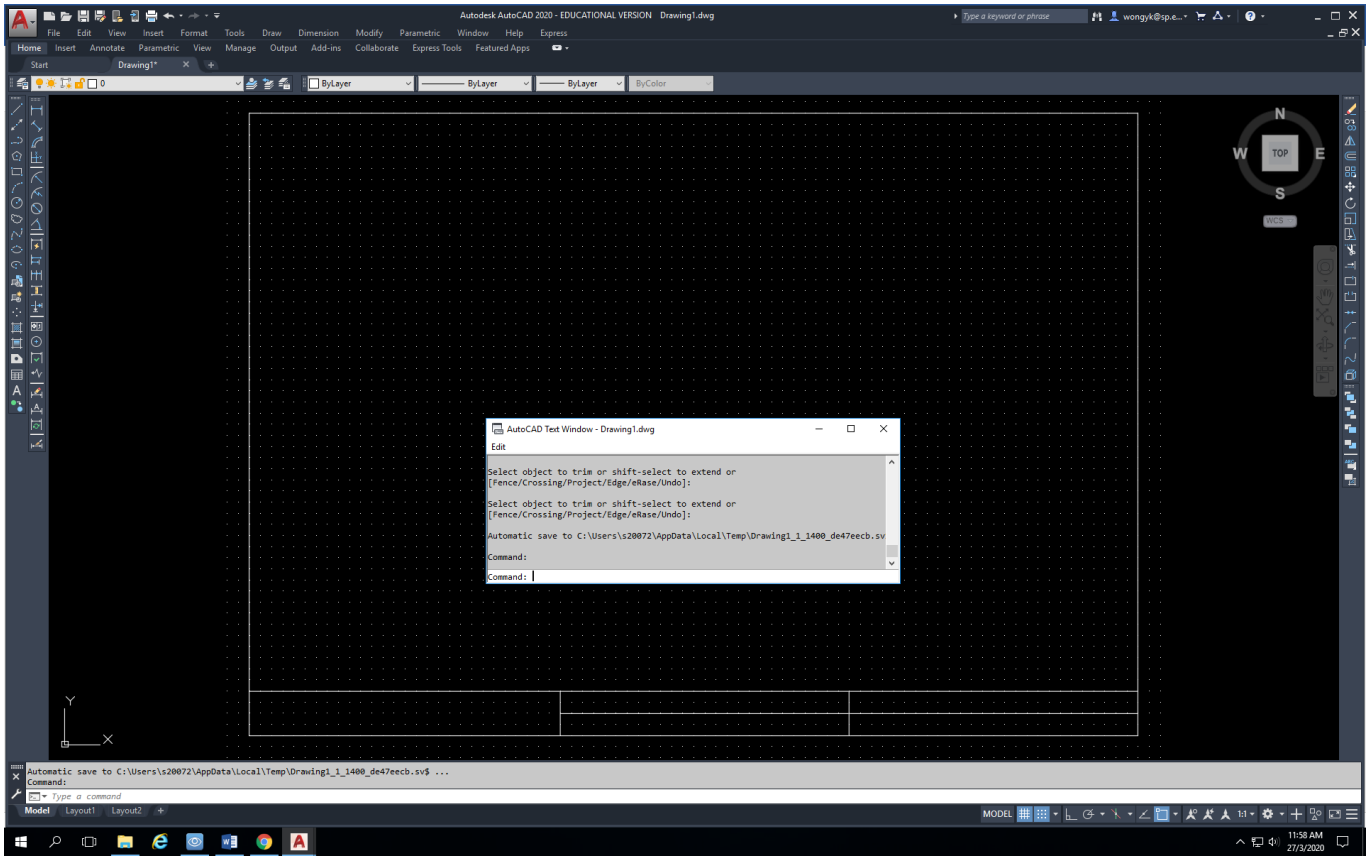

FIG 6

1. Next press=**enter**
2. Select object to be trimmed,
3. **Click those portion of the 3 lines that require to be removed**
4. The end result of an A3 template is shown in Fig 6
5. The bottom portion of smaller rectangles created is called Title Block.
6. It will be filled up with text in week 3.

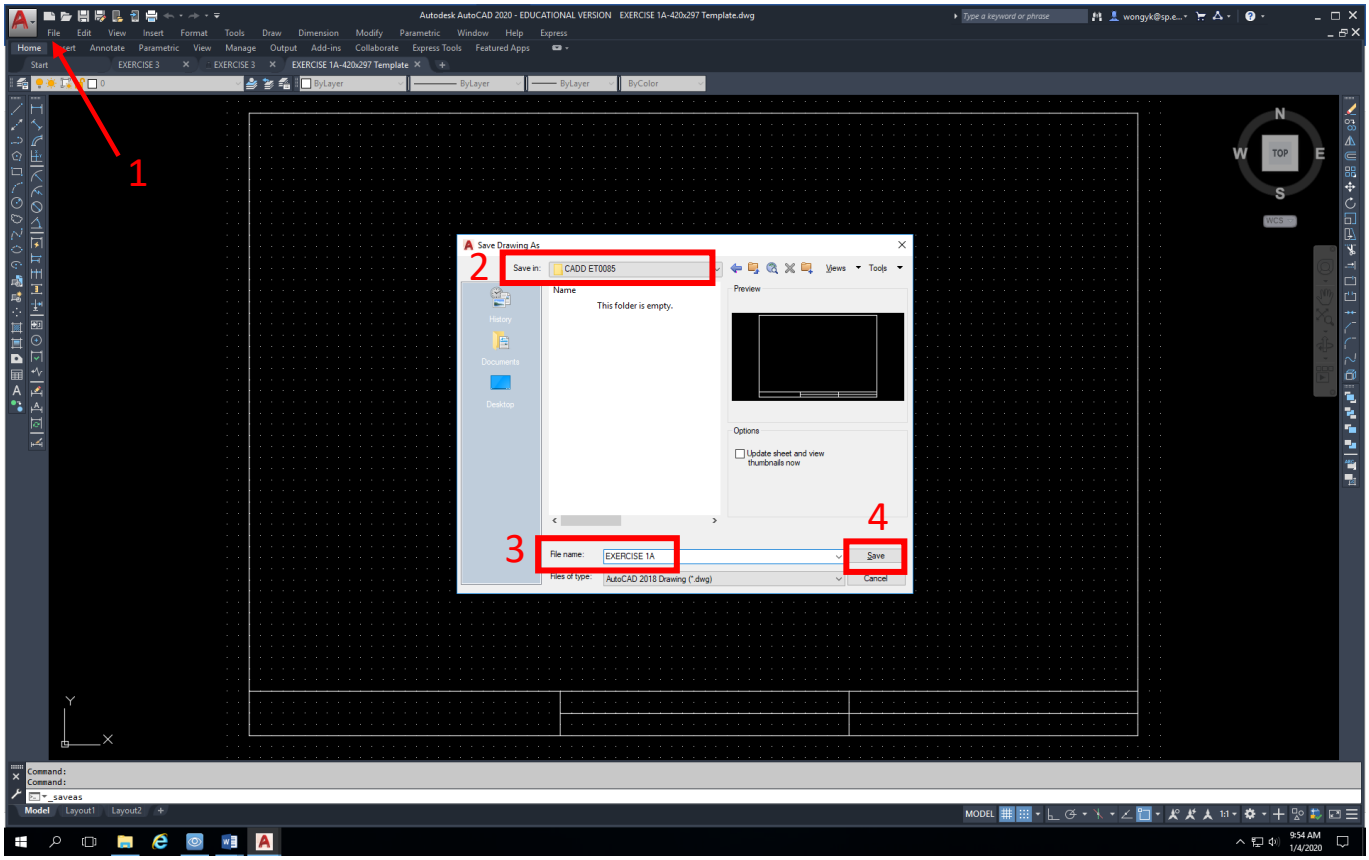

FIG 7

7. Save this drawing as shown in Fig 7:
   i. Click **File ...(1).** A pulldown menu appears
   ii. Click **Saveas** (From File pull-down menu)
   iii. Save in: **D Drive in your Notebook, create a folder=CADD ET0085 ..(2)** instead of default Documents
   iv. File Name: **EXERCISE 1A (3).** Then Click **Save ...(4)**

EXERCISE 1B

B. To design a 250mm x 250mm template for drawing

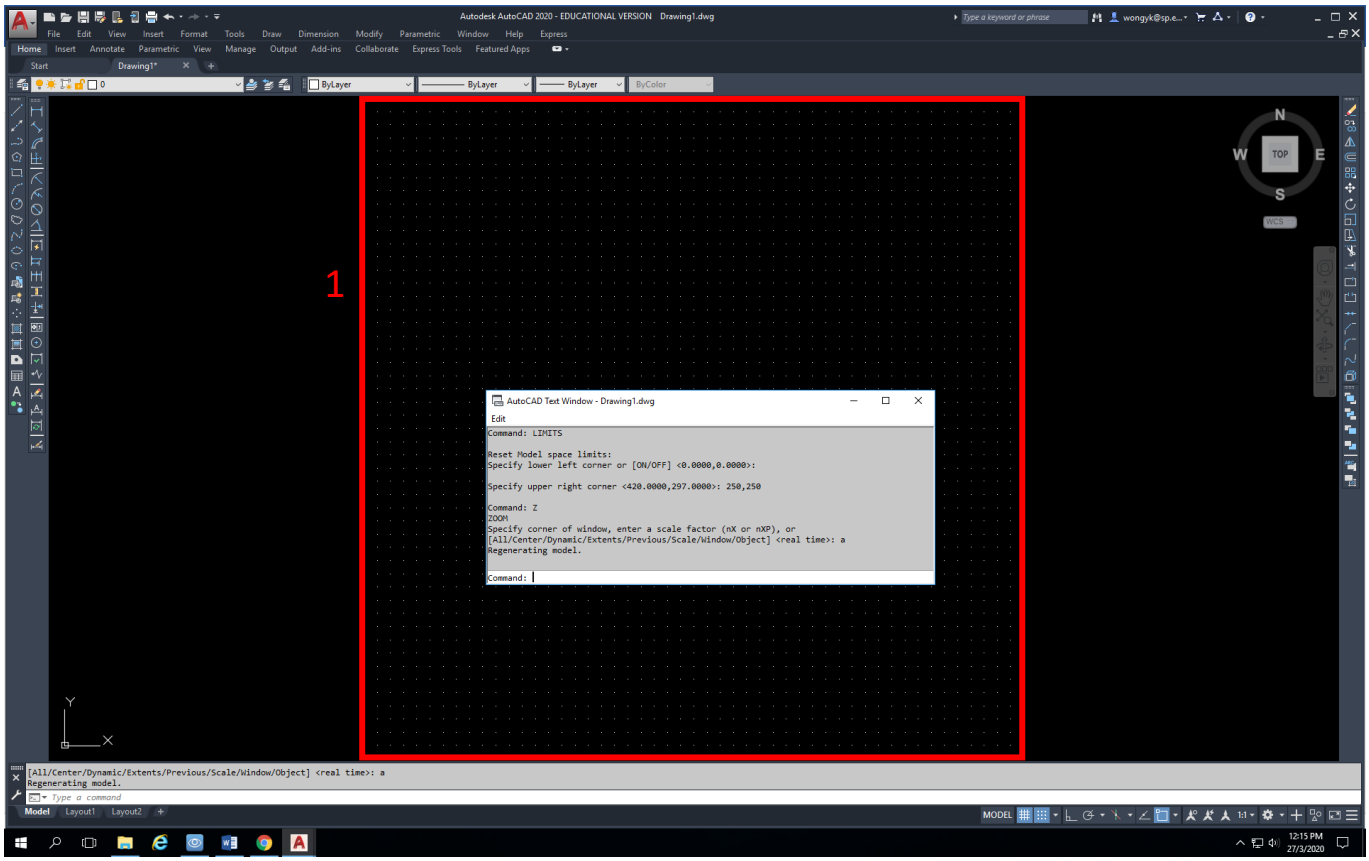

FIG 8

1. All existing settings remains except change the LIMITS to 250mm x 250mm
2. To set a drawing space of 250mm x 250mm from default A3 size drawing space, Type = **Limits**
3. Enter Lower Left corner, type= **0,0**
4. Enter Upper right corner, type= **250,250**, then **enter**
5. Then type **zoom**, (shortcut=z), type = **all**, and **enter**
6. The Drawing Space of 250mm x 250mm **(1)** is created as shown in Fig 8

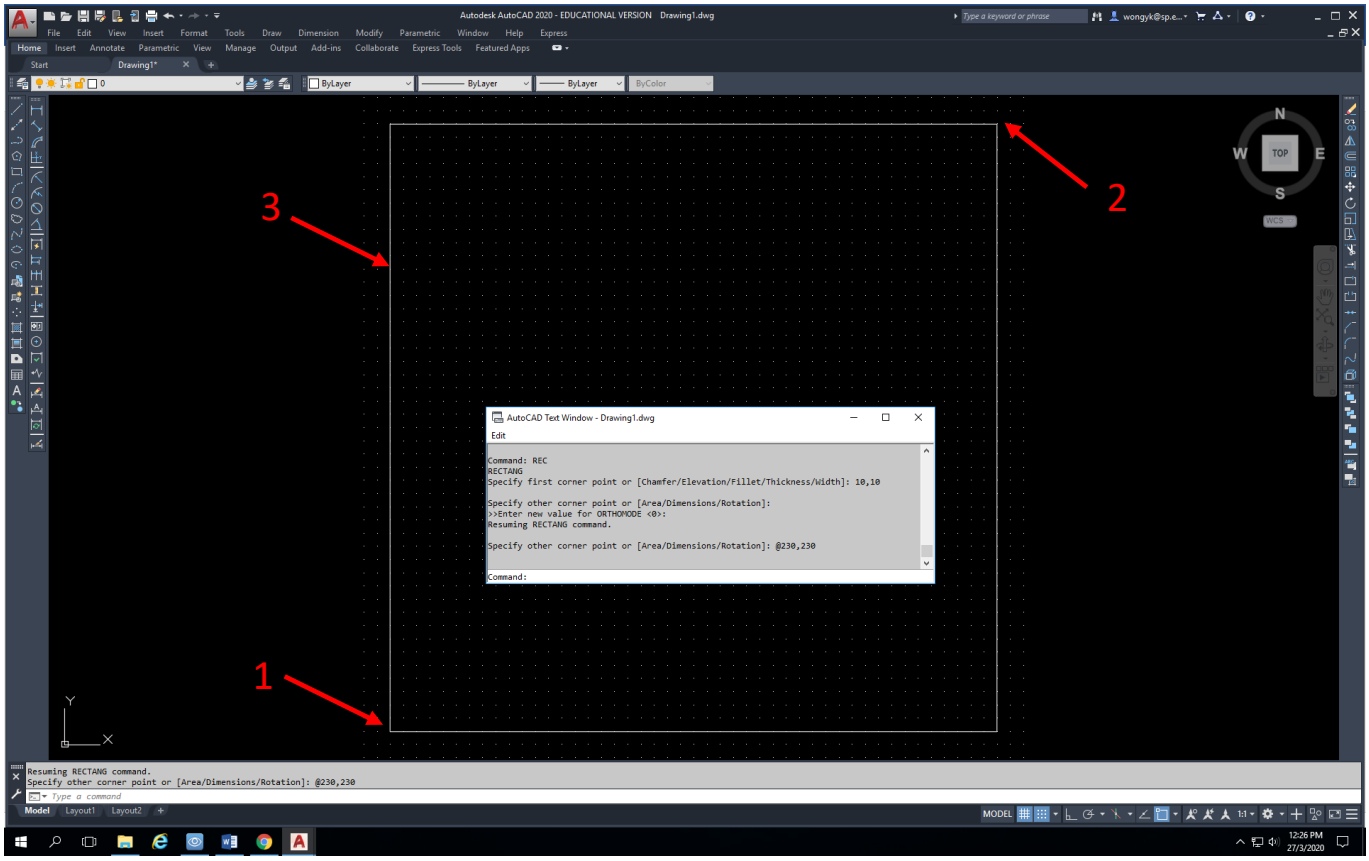

FIG 9

1. Next both border and title block for this template need to be created.
2. Similarly as done in A3 size template, draw a rectangle
3. Type **rec** and **enter**
4. 1st corner, type=**10,10 (1)**
5. The other corner, type=**@230,230 (2)** and then **enter**
6. A rectangle 250mm x 250mm (Border) **(3)** is created as shown in Fig 9

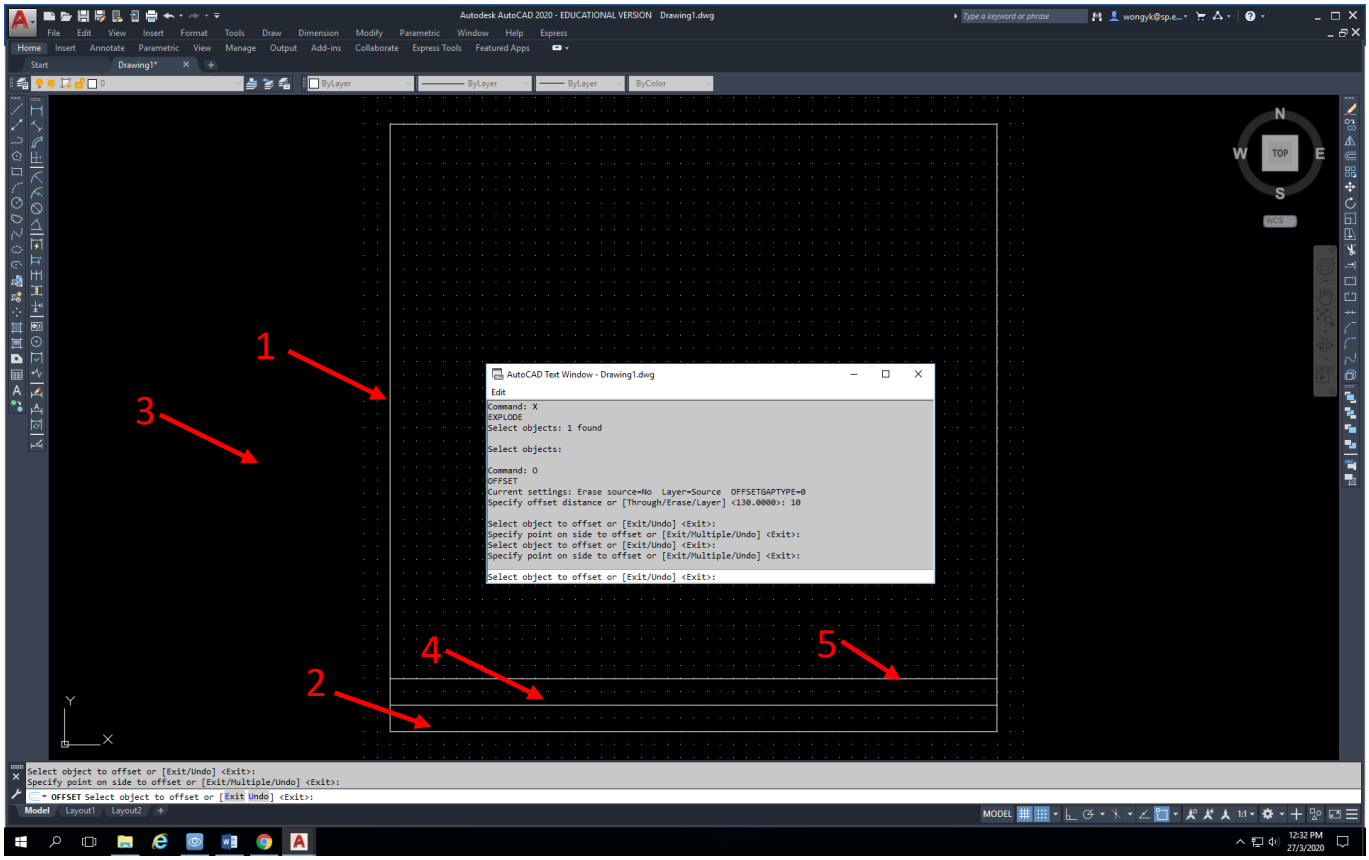

FIG 10

1. Use similar steps as done in A3 template to explode the 250mm x 250mm rectangle.
2. Type =**x** and **enter**
3. **Move cursor to rectangle (1) and click it**, then **enter**
4. Rectangle is broken into 4 edges
5. Use **Offset** command & set **offset distance = 10mm**, then **enter**. Similar to A3 template method.
6. Click on the bottom horizontal line of rectangle **(2),** move cursor up and click on any anywhere above bottom horizontal line **(3).** Another line **(4)** is created 10mm above the bottom horizontal line of rectangle.
7. Next, click the created new horizontal line, and then move cursor to click anywhere above the newly created horizontal line.
8. Another horizontal line **(5)** is created above it.
9. The steps are shown in Fig 10

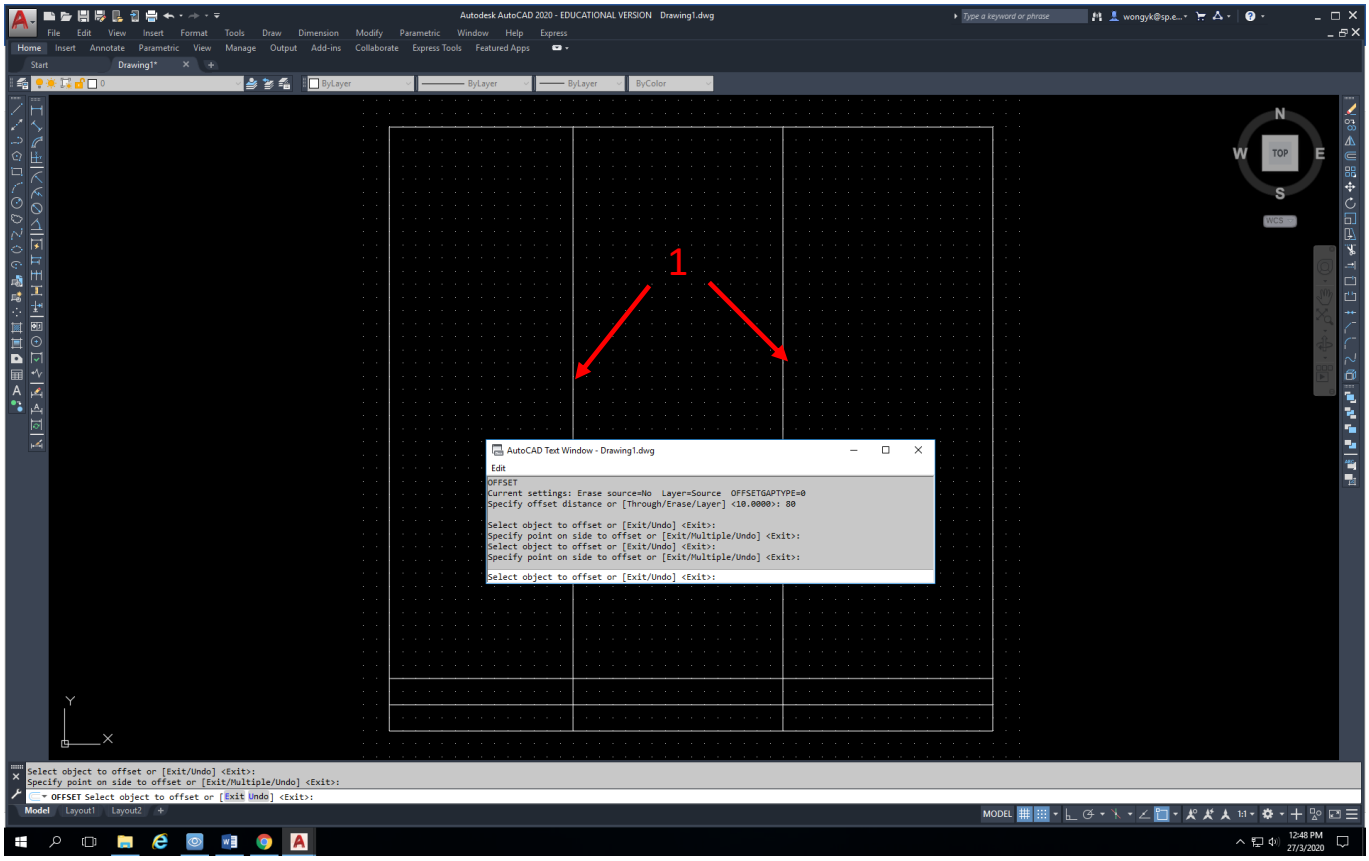

FIG 11

1. Next, offset=**80**mm the right vertical edge of rectangle to create two more vertical lines 80mm apart **(1)**
2. Steps are similar to Fig 10 except the Offset distance is now set to 80.
3. See Fig 11 for the steps shown

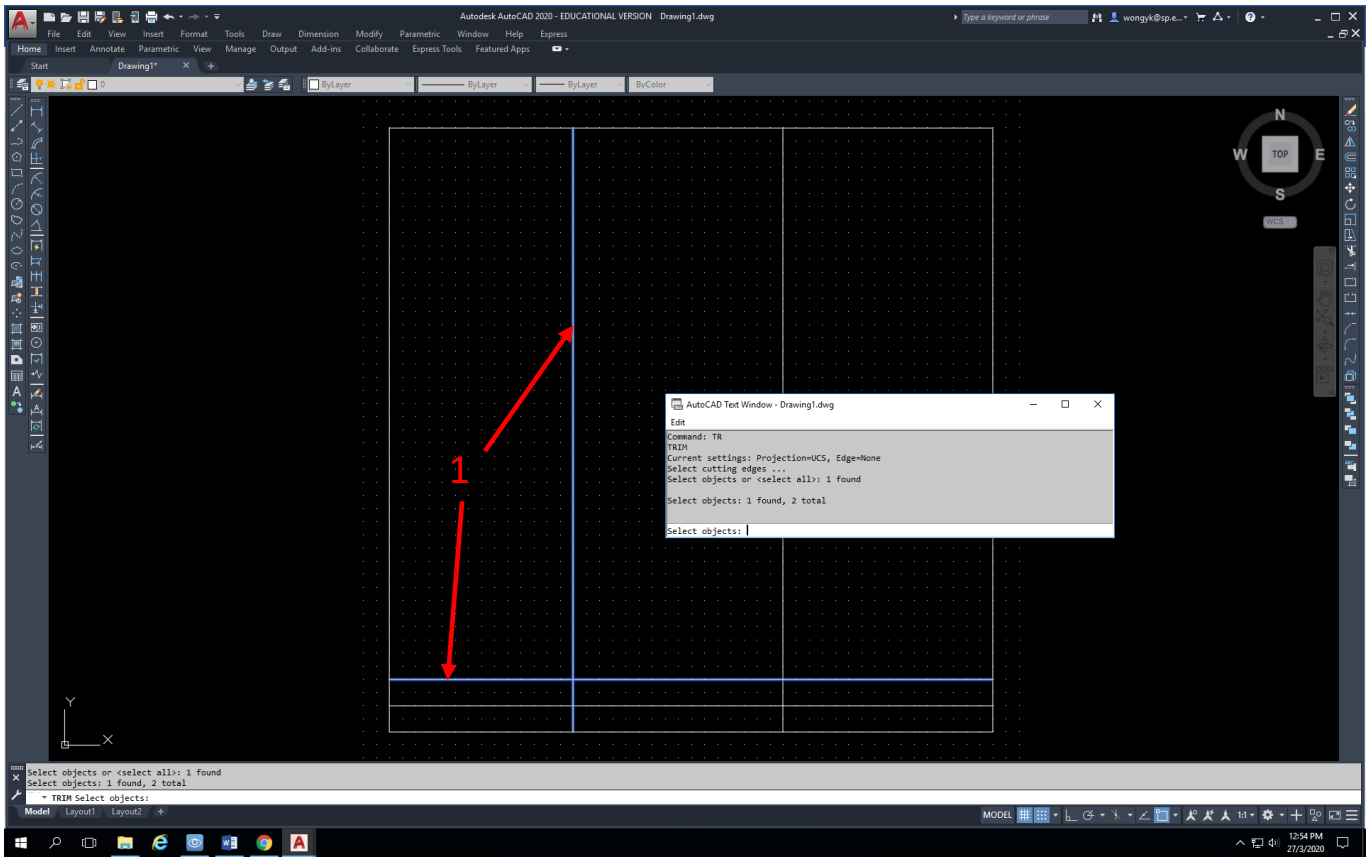

FIG 12

1. Next, Use Trim command to remove unwanted lines.
2. Type = **tr**
3. **Click on lines to set as cutting edges (1)**, i.e. the 2 lines highlighted in blue.
4. See Fig 12 for the steps shown

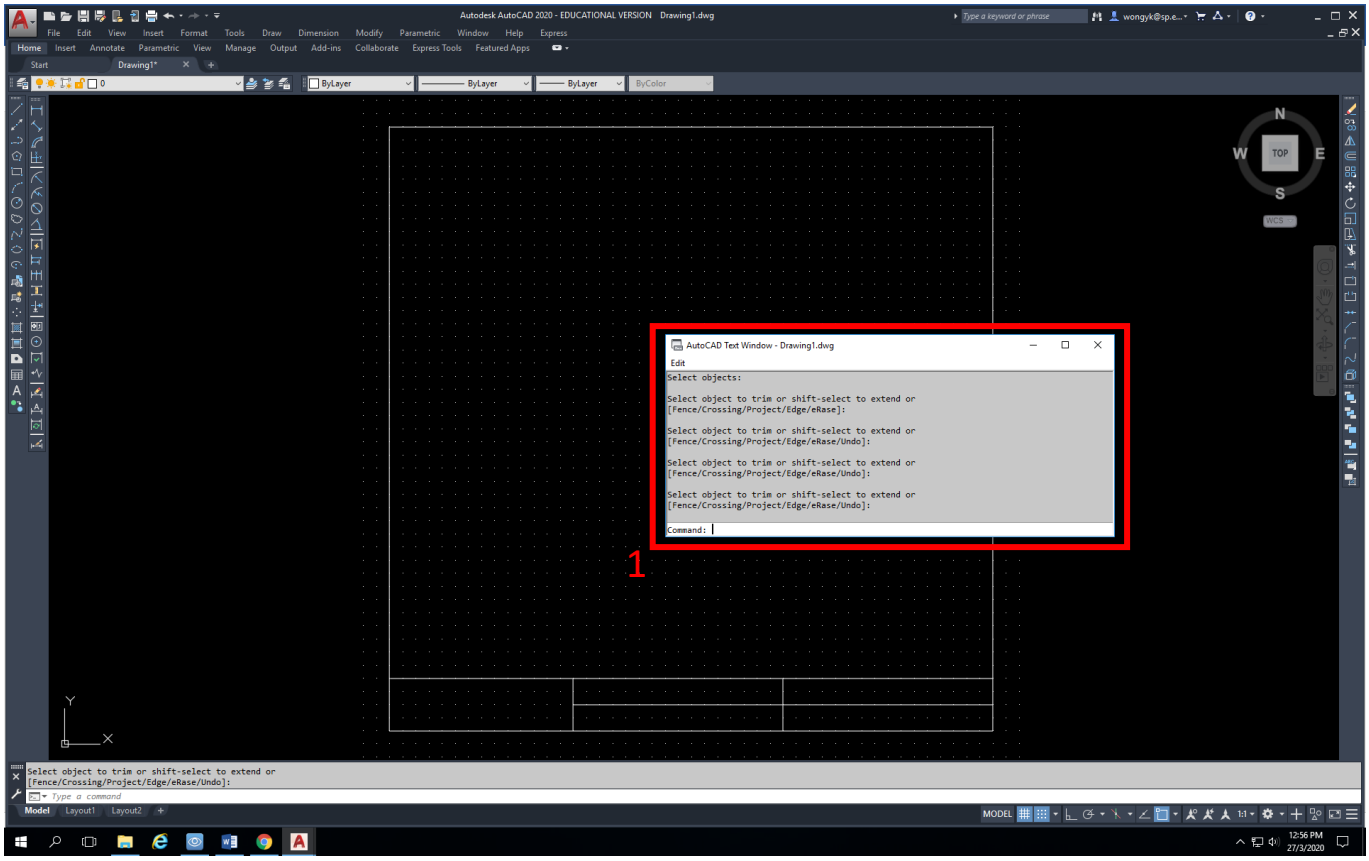

FIG 13

1. Next, click **enter**
2. Select the lines **by clicking the portion of the 3 unwanted lines**, and then click **enter**. The portion of the line selected will be removed.
3. A 250mm x 250mm template with a proper border & title block is created
4. See Fig 13 for the steps shown **(1)**

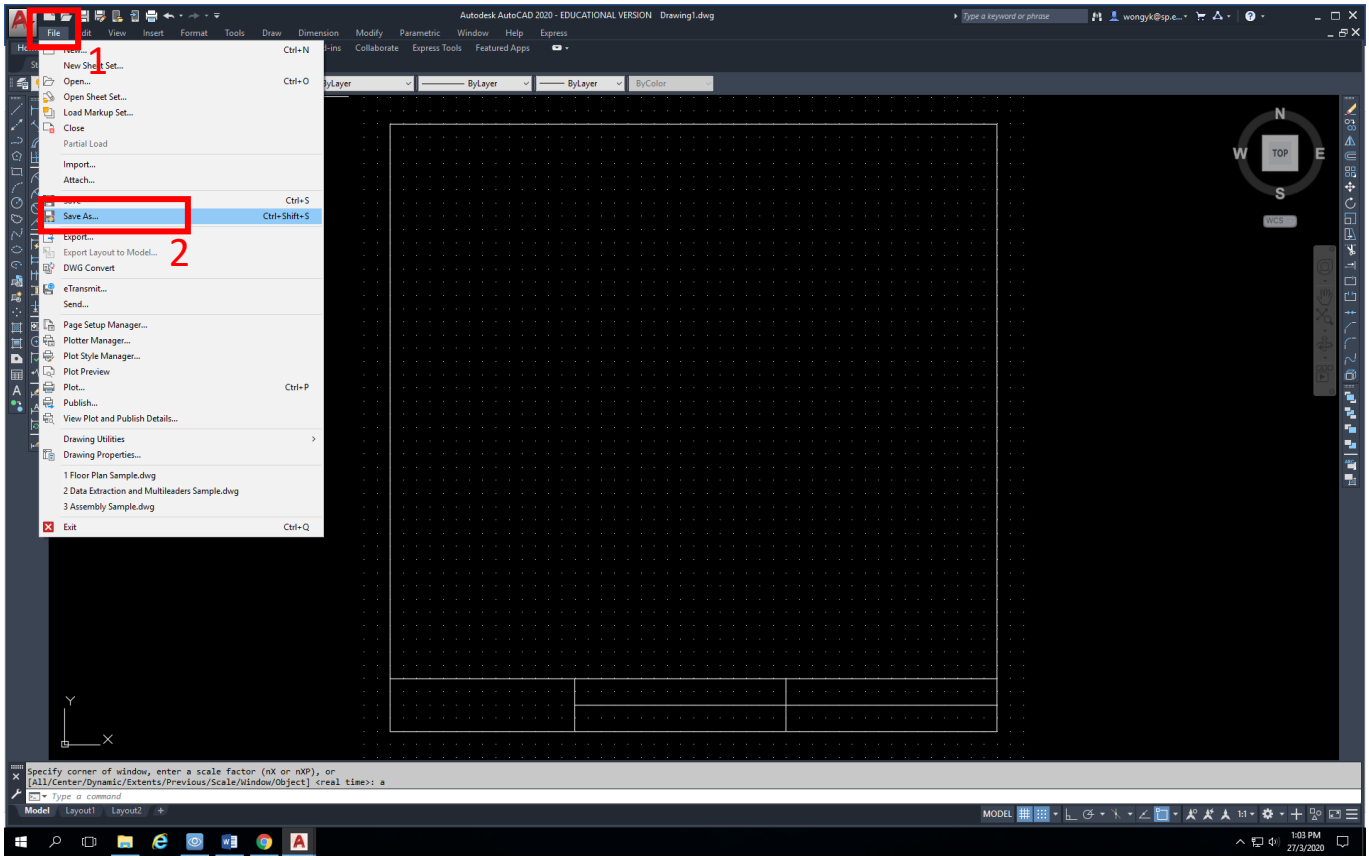

FIG 14

1. To save this 250mm x 250mm template, do the following
    i. Click **File (1)**
    ii. Click **Save As (2)**
2. See Fig 14 for the steps shown

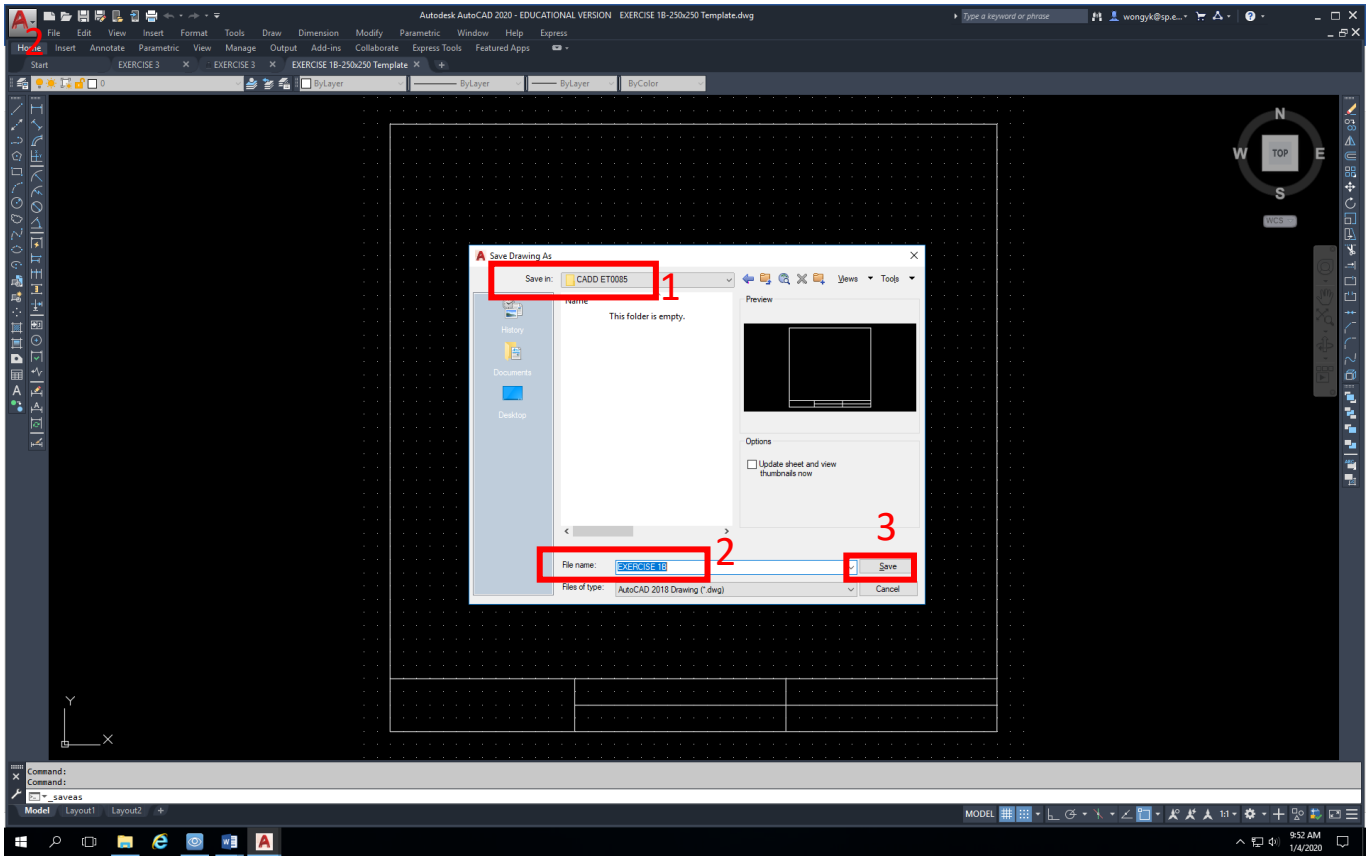

FIG 15

1. A dialog box “Save Drawing As” is shown in Fig 15:
   i. Save in **(1): D Drive in your Notebook, create a folder= CADD ET0085** instead of default “Documents”
   ii. File Name **(2): EXERCISE 1B,** then click **Save** …**(3)**

This 250mm x 250mm template will be used in following 2 weeks, i.e. Exercise 2, 3, & 4

THE END