# Lecture Week 25

# Simplification of LPP & Tax Calculation

# Using MS-Excel

# Simplification of LPP Using Excel..

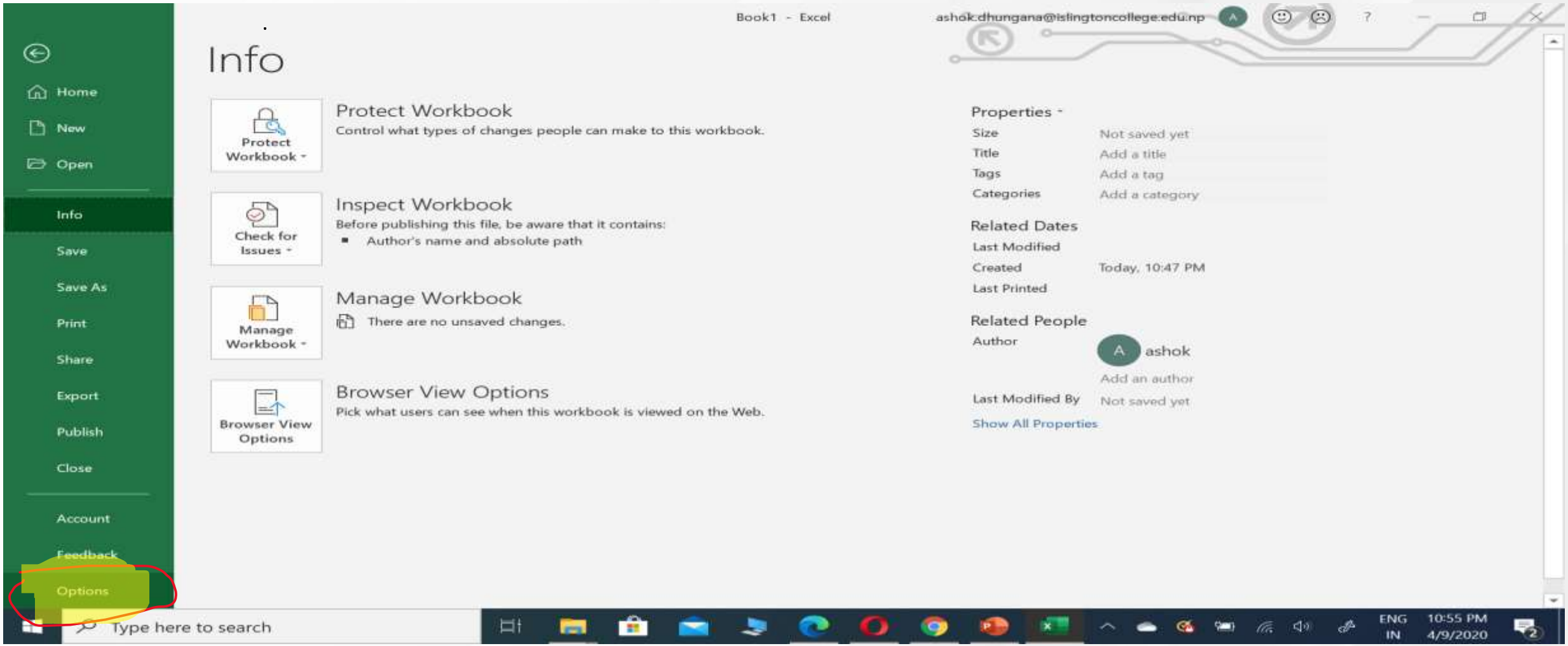
**Dear Students,**

**We will now solve LPP using MS –Excel  for that you need to add on one tool called Solver add in MS Excel .**

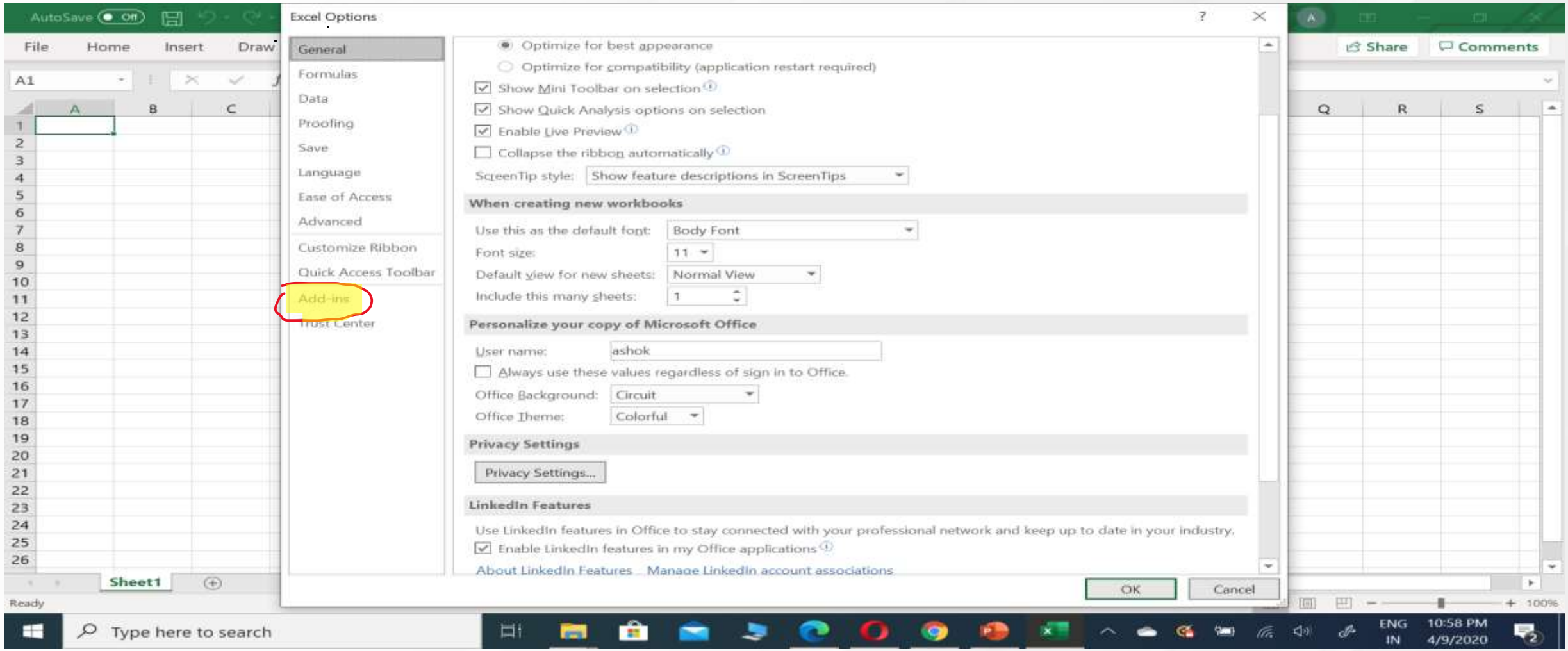
**Follow the following steps to ass the solver add in .**

- Go to **File** menu in excel template
- Choose the **Option menu** and then choose **Add-ins**.
- You can see **Solver add in** in the screen and click on it to install the solver .
- You can check whether or not the **solver** add in is installed or not by clicking **data** button in excel template.

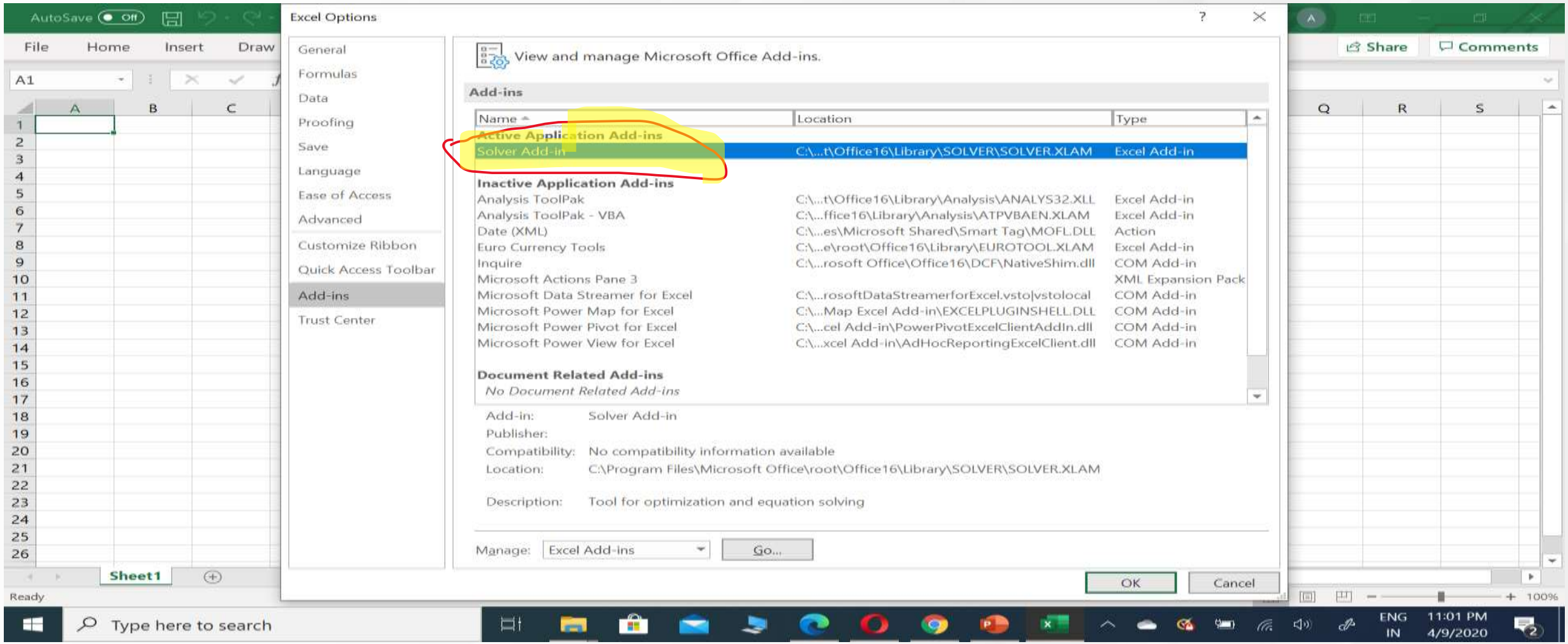
# Choose File button and click option



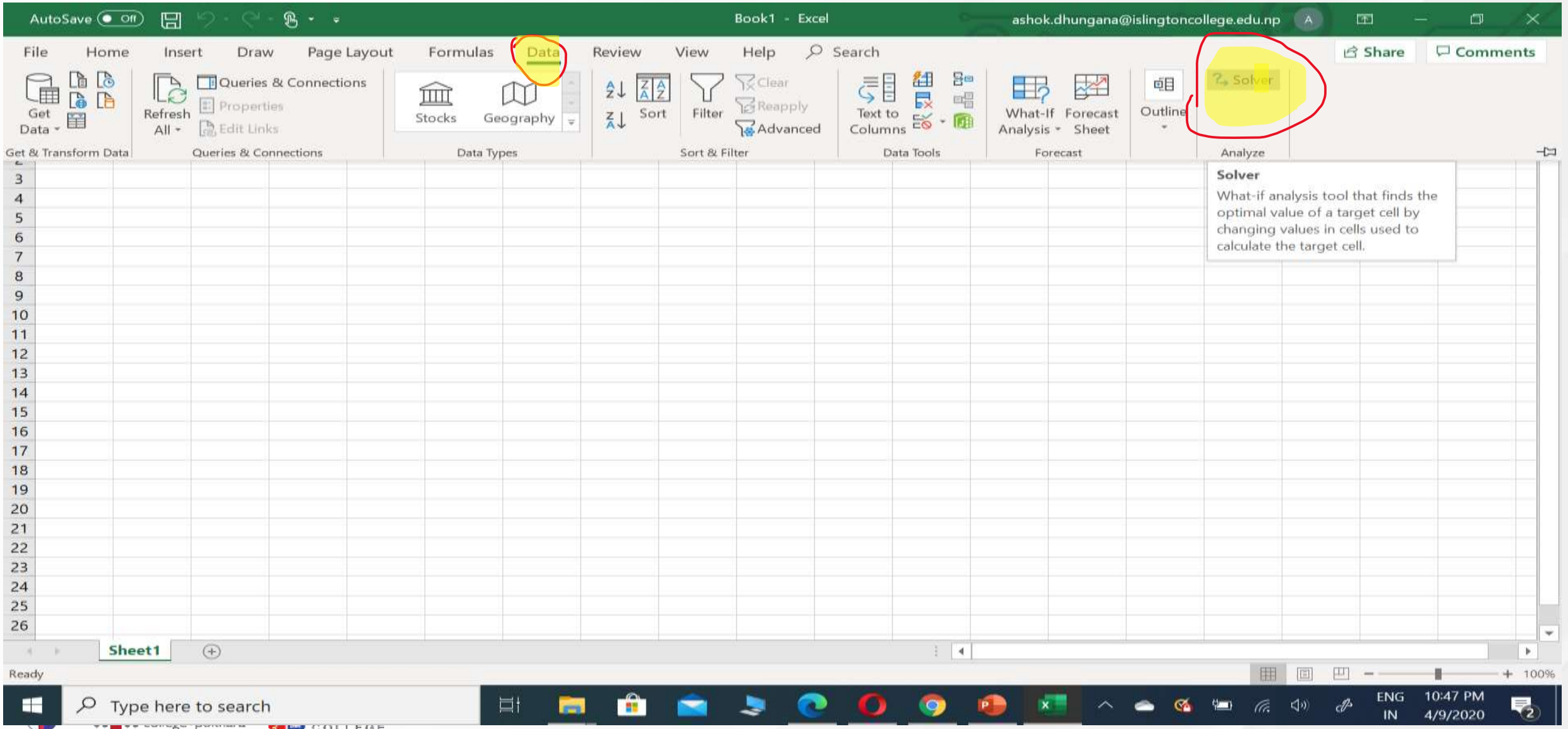
# Choose Add-ins..



# Click on Solver Add-in



# Check for solver by clicking data..



# Simplification of LPP using Excel...

Once the solver is installed, we can solve the LP problems using MS Excel .

**Let's try to solve ..**

**1.** Minimize $Z = 50x + 150y + 100z$

Subjected to:

$5x + 5y + 5z \geq 2500$

$5x + 10y + 15z \geq 3500$

$3x - y + 3z \leq 0$

$x \geq 0, y \geq 0, z \geq 0$

**Let's open the excel and try to solve ....**

# Simplification of LPP using Excel…

**Question 2 : (Try this by yourself )**

Solve the following LPP,

**Maximize Z = 4x + 7y + 2z**

Subjected to the constraints,

$x + y + z \leq 60$

$2x + 3y + 7z \geq 150$

$3x + 6y + 4z = 200$

$x, y, z \geq 0$

# LPP Using Excel :

**Question : (Past Year Course Work Question)**

Martin and Son's company wants to manufacture a mixture containing three contents X, Y and Z. The cost of X, Y and Z are $5, $4 and $3 respectively. The company prepares the mixture to meet out the demand of the costumers in the following manner.
The quantity of X cannot be more than 200 kgs in the mixtures.
The quantity of Y used should be at least 300 kgs.
The content of Z cannot be more than 400 kgs.
Find the optimal combination of the three contents for a mixture of 1000 kgs, so that the total cost is minimum.

# LPP Using Simplex Method :

## Question :

Martin and Son's company wants to manufacture a mixture containing three contents X, Y and Z. The cost of X, Y and Z are $5, $4 and $3 respectively. The company prepares the mixture to meet out the demand of the costumers in the following manner.
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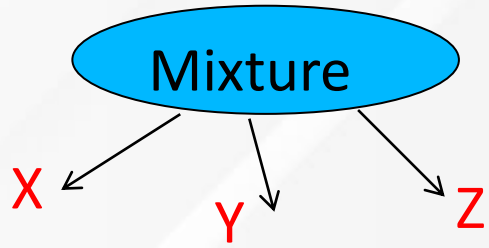
Find the optimal combination of the three contents for a mixture of 1000 kgs, so that the total cost is minimum.

## Problem Analysis:




Cost : $ 5 $4 $3

X cannot be more than 200 kg ( $X \leq 200$)

Y should be at least 300 kg ( $Y \geq 300$)

Z cannot be more that 400 kg ($Z \leq 400$)

Total mixture must be 1000 kg ($X + Y + Z = 1000$)

# LPP Using Excel :

**Mathematical Formulation :**

**For Decision Variables**

Let x kg ,y kg and z kg of mixture X,Y and Z should be purchased and mix together to form 1000 kg of mixture in order to minimize the cost.

**For Objective Function**

Total cost = 5 x + 4 y + 3 z

Let C = 5 x + 4 y + 3 z

**Minimize C = 5 x + 4 y + 3 z**

**For Constraints**

**$x \leq 200$** ( Mixture X constraint)

**$y \geq 300$** ( Mixture Y constraint)

**$z \leq 400$** ( Mixture Z constraint)

**$x + y + z = 1000$** ( Total Mixture constraint)

**$x, y, z \geq 0$**

**Solve it Now !!!**

# Tax Calculation Using Excel….

# Tax Calculation Using MS - Excel

Write a procedure, **tax,** to calculate (**to the nearest Rupees**) the tax a person owes, depending on his/her yearly income and permissible deductions. Calculate the tax using the table below:

| Income Tax rates | |
|---|---|
| **Tax rate** | Taxable income |
| **Basic rate 10%** | Rs 0 to Rs 75,000 |
| **Medium rate 25%** | Rs 75,000 to Rs 4,50,000 |
| **Higher rate 35%** | Rs 4,50,000 to Rs 25,00,000 |
| **Additional rate 50%** | Over Rs 25,00,000 |

**Calculate the tax calculation for the person having yearly income ,**

i. **Rs.38000**
ii. **Rs.425000**
iii. **Rs.2025000**
iv. **Rs.4500000**
v. **– (Rs.37,500)**

**(For Negative value should show error message)**

# *Thank you*