

# K. S. SCHOOL OF ENGINEERING AND MANAGEMENT

# DEPARTMENT OF CIVIL ENGINEERING

# **BCV358A – DATA ANALYTICS WITH EXCEL**

# LABORATORY MANUAL

STUDENT NAME: \_\_\_\_\_

USN: \_\_\_\_\_



# **K S SCHOOL OF ENGINEERING AND MANAGEMENT**

Holiday Village Road, Vajarahalli Village, Mallasandra, off, Kanakapura Rd, Bengaluru, Karnataka 560109

### VISION

To impart quality education in engineering and management to meet technological business and societal needs through holistic education and research.

### MISSION

### K. S. School of Engineering and Management shall,

- Establish state-of-art infrastructure to facilitate effective dissemination of technical and managerial knowledge.
- Provide comprehensive educational experience through a combination of curricular and experiential learning, strengthened by industry-institute interaction.
- Pursue socially relevant research and disseminate knowledge.
- Inculcate leadership skills and foster entrepreneurial spirit among students.

## **DEPARTMENT OF CIVIL ENGINEERING**

### VISION

• To emerge as one of the leading Civil Engineering Department by producing competent and quality ethical engineers with strong foot hold in the areas of Infrastructure development and research.

### **MISSION**

- Provide industry oriented academic training with strong fundamentals and applied skills.
- Engage in research activities in Civil Engineering and allied fields and inculcate the desired perception and value system in the students.

EXPT. No.	NAME OF THE EXPERIMENT	PAGE NO.
01	Introduction to Data Analysis Using Spreadsheet	01
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## **Experiment No: 01**

Date:

## **INTRODUCTION TO ANALYSIS USING SPREADSHEET**

#### What is Excel?

#### Excel is pronounced "Eks - sel"

It is a spreadsheet program developed by Microsoft. Excel organizes data in columns and rows and allows you to do mathematical functions. It runs on Windows, macOS, Android and iOS. The first version was released in 1985 and has gone through several changes over the years. However, the main functionality mostly remains the same.

#### Excel is typically used for:

- Analysis
- Data entry
- Data management
- Accounting
- Budgeting
- Data analysis
- Visuals and graphs
- Programming
- Financial modeling
- And much, much more!

#### Why Use Excel?

- It is the most popular spreadsheet program in the world
- It is easy to learn and to get started.
- The skill ceiling is high, which means that you can do more advanced things as you become better
- It can be used with both work and in everyday life, such as to create a family budget
- It has a huge community support
- It is continuously supported by Microsoft
- Templates and frameworks can be reused by yourself and others, lowering creation costs

The Ribbon is marked with a red rectangle and the Sheet is marked with a yellow rectangle:

and and their street and an entrume of	P Search (Option + Q)	🕀 Go premium
Home Insert Draw Page Layout Formulas Data Review View H	elp / Editing ~	🖻 Share 💭 Com
Calbri v 11 v B ⊞ v △ v ▲ v ··· ■ v 換	📴 Merge ~ General ~ \$ ~ 12 🗐 🕮 Cond	alitional Formatting 🗸 💓 Styles V 🎯 V 😥 V 😥 V 😥 V 👘 🚥
A 1*		
A B C D E P G H I J	K L M N O P Q	R S T U V W X Y Z AA
	Choot	
	Sheet	

The Ribbon provides shortcuts to Excel commands. A command is an action that allows you to make something happen. This can for example be to: insert a table, change the font size, or to change the color of a cell.

The Ribbon may look crowded and hard to understand at first. Don't be scared, It will become easier to navigate and use as you learn more. Most of the time we tend to use the same functionalities over again.

The Ribbon is made up by the App launcher, Tabs, Groups and Commands. In this section we will explain the different parts of the Ribbon.



#### **App launcher**

The App launcher icon has nine dots and is called the Office 365 navigation bar. It allows you to access the different parts of the Office 365 suite, such as Word, PowerPoint and Outlook. App launcher can be used to switch seamlessly between the Office 365 applications.

#### Tabs

The tab is a menu with sub divisions sorted into groups. The tabs allow users to quickly navigate between options of menus which display different groups of functionality.

#### Groups

The groups are sets of related commands. The groups are separated by the thin vertical line break.

### Commands

The commands are the buttons that you use to do actions.

Now, let's have a look at the Sheet. Soon you will be able to understand the relationship between the Ribbon and the Sheet, and you can make things happen.

The Sheet is a set of rows and columns. It forms the same pattern as we have in math exercise books, the rectangle boxes formed by the pattern are called cells.

Values can be typed to cells.

Values can be both numbers and letters:

A1	~	$f_x$ 1			
	Α	В	С	D	Е
1	1	Hello World			
2					
3					
4					
5					
6					
7					
8					
9					
10					

Have a look at the picture below. Hello world was typed in cell C4. The reference can be found by clicking on the relevant cell and seeing the reference in the Name Box to the left, which tells you that the cell's reference is C4.

# **Experiment No: 02**

## Date:

# PERFORM BASIC SPREADSHEET TASKS

8	AutoSave 💽 off) 🗄 🧐 - 🛛	Ç <sup>2</sup> − = Book1 -								👃 – 🧔 🗴
File	Home Insert Page Lay	out Formulas [	Data Review View A	Automate Help						Comments Share -
Paste	Calibri Calibri B I U ~ E board Fs Font	11 → A <sup>*</sup> A <sup>*</sup> → <u>A</u> → <u>A</u> → Fs	= = =	D Wrap Text	General         ~           E™         %         9         50         50           Number         F5	Conditional Format as Formatting * Table * S Styles	Cell Insert Del ityles - Ce	$ \begin{array}{c} & & \sum \\ & & \sum \\ \text{ete Format} \\ & & \\ & $	t & Find & Sensitivity r * Select * Sensitivity sensitivity	Add-ins Analyze Data
J15	$\sim$ 1 $\times \checkmark f_x$									~
	A	В	С	D	E	F	G	Н	1	J
1	Attendance									
2	4823		2429							
3	12335		10482							
4	9718									
5										
6										
7										
8										
9										
10										
11										
12										
< C	> Sheet1 +					1	4			

Exercise 1: Determine the Sum of the Values of the Given numbers.

# Solution :

	A	В	C	D
1	Attendance			
2	4823		2429	
3	12335		10482	
4	9718			
5	1 · · · · · · · · · · · · · · · · · · ·			
6			=SUM(A2:A	4, C2: C3)

Formula that uses two cell ranges: =**SUM**(**A2:A4,C2:C3**) sums the numbers in ranges A2:A4 and C2:C3. Press Enter to get the total of 39787.

<b>a</b> .	utoSave 💽 🖻 🖯	<ul> <li>Q<sup>2</sup> + v Bookt - E</li> </ul>							vrungar J, Divya 🤱 — 🔿 🗙
File	Home Insert Page I	ayout Formulas Da	ata Review View A	Automate Help					Comments Share ~
Paste	X         Calibri           Image: v         B         I         U         ∨	→ <u>11</u> → A <sup>*</sup> A <sup>*</sup> ⊞ → <u>A</u> <sup>*</sup> → <u>A</u> →	= = <b>=</b> ≫ ~ 8 = = = <b>= = =</b>	b Wrap Text ∃ Merge & Center →	General ~	Conditional Format as Ce Formatting + Table + Style	Insert Delete Format	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Sensitivity Add-ins Analyze Data
Clipbe	oard 15 F	ont Fa	Alignment	F <sub>3</sub>	Number 🕞	Styles	Cells	Editing	Sensitivity Add-ins
E3	$\sim$ : $\times \checkmark Jx$	-	-	-		_			
	A	В	C	D	E	F	G	Н	I J
1			5	3					
2									
3									
4									
5									
6									
7									I
8									
9									
10									
11									
12									
12	> Sheet1	+				: 41			*
Ready	To Accessibility: Good to go								I III+ + 220%

Exercise 2: Determine the Subtract of the Values of the Given numbers.

## Solution:

- 1. Type a number in cells C1 and D1.
- 2. In cell E1, type an equal sign (=) to start the formula.
- 3. After the equal sign, type C1-D1.



Exercise 3: Determine the Average of the Values of the Given numbers.

F2		$\sim f_x$				
	А	В	С	D	Е	F
1	Trainer	Pokeball	Great ball	Ultraball	Master ball	Average
2	lva	10	4	1	1	
3	Liam	12	3	0	1	
4	Jenny	15	1	3	1	
5	Iben	4	2	6	0	
6	Adora	10	4	1	1	
7	Kasper	9	2	1	0	

# Solution :

F2		fx = AV	/ERAGE(					
	А	В	С	D	Е	F	G	Н
1	Trainer	Pokeball	Great ball	Ultraball	Master ball	Average		
2	lva	10	4	1	1	=AVERAGE(		
3	Liam	12	3	0	1	AVERAGE (nu	<b>mber1</b> : [numb	er21:)
4	Jenny	15	1	3	1			11 1
5	Iben	4	2	6	0			
6	Adora	10	4	1	1			
7	Kasper	9	2	1	0			

F2	$\dot{f}x$ =AVERAGE(B2:E2								
	А	В	С	D	Е	F	G	Н	
1	Trainer	Pokeball	Great ball	Ultraball	Master ball	Average			
2	lva	10	4	1	1	=AVERAGE(	32:E2		
3	Liam	12	3	0	1	AVERAGE (number1: [number2]:)		er21:)	
4	Jenny	15	1	3	1		/L		
5	Iben	4	2	6	0				
6	Adora	10	4	1	1				
7	Kasper	9	2	1	0				

F2		$f_x = AV$	/ERAGE(B2:E	2)				
	А	В	С	D	Е	F	G	Н
1	Trainer	Pokeball	Great ball	Ultraball	Master ball	Average		
2	Iva	10	4	1	1	4		
3	Liam	12	3	0	1			
4	Jenny	15	1	3	1			
5	Iben	4	2	6	0			
6	Adora	10	4	1	1			
7	Kasper	9	2	1	0			

F2		$f_x = A $	/ERAGE(B2:E	2)				
	А	В	С	D	Е	F	G	Н
1	Trainer	Pokeball	Great ball	Ultraball	Master ball	Average		
2	lva	10	4	1	1	4		
3	Liam	12	3	0	1	4		
4	Jenny	15	1	3	1	5		
5	Iben	4	2	6	0	3		
6	Adora	10	4	1	1	4		
7	Kasper	9	2	1	0	3		

Exercise 4: Determine the Records of Apple in the given data.

.

2	Sales 7	ransacti	ons	
3		1		
4	Region	Sales Rep	Product	Units
5	East	Tom	Apple	6,380
6	West	Fred	Grape	5,619
7	North	Amy	Pear	4,565
8	South	Sal	Banana	5,323
9	East	Fritz	Apple	4,394
10	West	Sravan	Grape	7,195
11	North	Xi	Pear	5,231
12	South	Hector	Banana	2,427
13	East	Tom	Banana	4,213
14	West	Fred	Pear	3,239
15	North	Amy	Grape	6,420
16	South	Sal	Apple	1,310
17	East	Fritz	Banana	6,274
18	West	Sravan	Pear	4,894
19	North	Xi	Grape	7,580
20	South	Hector	Apple	9,814

# Solutions:

In the following example we used the formula **=FILTER**(**A5:D20,C5:C20=H2,''''**) to return all records for Apple, as selected in cell H2, and if there are no apples, return an empty string ("").

F5	5	>	< - J	& =FIL	TE	R(A5:D20,	C5:C20=H2)		
1	A	в	с	D	E	F	G	н	1
1									
2	Sales	Transactio	ons				Product:	Apple	
3									
4	Region	Sales Rep	Product	Units		Region	Sales Rep	Product	Units
5	East	Tom	Apple	6,380		East	Tom	Apple	6,380
6	West	Fred	Grape	5,619		East	Fritz	Apple	4,394
7	North	Amy	Pear	4,565		South	Sal	Apple	1,310
8	South	Sal	Banana	5,323		South	Hector	Apple	9,814
9	East	Fritz	Apple	4,394					
10	West	Sravan	Grape	7,195					
11	North	Xi	Pear	5,231					
12	South	Hector	Banana	2,427					
13	East	Tom	Banana	4,213					
14	West	Fred	Pear	3,239					
15	North	Amy	Grape	6,420					
16	South	Sal	Apple	1,310					
17	East	Fritz	Banana	6,274					
18	West	Sravan	Pear	4,894					
19	North	Xi	Grape	7,580					
20	South	Hector	Apple	9,814					

#### **Experiment No: 03**

#### Date:

## **CLEANING AND WRANGLING DATA USING SPREADSHEETS**

#### **Remove Duplicates**

One of the easiest ways of cleaning data in Excel is to remove duplicates. There is a considerable probability that it might unintentionally duplicate the data without the user's knowledge. In such scenarios, you can eliminate duplicate values.

Here, you will consider a simple student dataset that has duplicate values. You will use <u>Excel's built-in function</u> to remove duplicates, as shown below.

The original dataset has two rows as duplicates. To eliminate the duplicate data, you need to select the data option in the toolbar, and in the Data Tools ribbon, select the "Remove Duplicates" option. This will provide you with the new dialogue box, as shown below.

	А	В	С	D	E	F	G	н	1	J	К	L	М	N
1	Name	Roll No	Year	Blood Group	Engg 1	Engg 2	Engg 3	Engg 4	Engg s	Engg 6	<b>Marks Obtained</b>	Percentage	Round-off Percentage	Total Marks
2	Joe	1011	IV	O+ve	32	65	86	88	79	79	429	71.5	71.5	600
3	John	2011	IV	B+ve	65	76	92	75	65	85	458	76.33333333	76.4	600
4	Mary	1028	IV	A-ve	32	87	33	33	52	65	302	50.33333333	50.4	600
5	Mark	1072	IV	AB+ve	69	87	82	65	78	85	466	77.66666667	77.7	600
6	Sunan	2874	IV	A-ve	33	90	88	90	65	54	420	70	70	600
7	Jenniffer	2084	IV	B+ve	65	33	34	85	31	33	281	46.83333333	46.9	600
8	Mike	2907	IV	AB+ve	76	91	56	71	94	62	450	75	75	600
9	Tim	2917	IV	AB-ve	44	33	78	70	89	86	400	66.66666667	66.7	600
10	Jeffery	2962	IV	O-ve	77	92	98	60	82	89	498	83	83	600
11	Morgan	1972	IV	O+ve	87	84	55	62	72	91	451	75.16666667	75.2	600
12	John	2011	IV	B+ve	65	76	92	75	65	85	458	76.33333333	76.4	600
13	Mark	1072	IV	AB+ve	69	87	82	65	78	85	466	77.66666667	77.7	600
14	Mike	2807	IV	AB+ve	76	91	56	71	94	62	450	75	75	600

Here, you need to select the columns you want to compare for duplication. Another critical step is to check in the headers' option as you included the column names in the data set. Excel will automatically scan it by default.



Next, you must compare all columns, so go ahead and check all the columns as shown below.

Remove Duplicates		?	×							
To delete duplicate values, select one or more columns that contain duplicates.										
Select All	My data h	as head	lers							
Columns          Name         Roll No         Year         Blood Group         Engg 1         Engg 2         Engg 3         Engg 4         Engg 6         Marks Obtained         Percentage         Round-off Percentage         Total Marks										
	ОК	Canc	el							

Select Ok, and Excel performs the operations required and provides you with the data set after filtering out the duplicate data, as shown below.

	А	В	C	D	E	F	G	H	1	J	K	L	M	N
1	Name	Roll No	Year	<b>Blood Group</b>	Engg 1	Engg 2	Engg 3	Engg 4	Engg s	Engg 6	<b>Marks Obtained</b>	Percentage	<b>Round-off Percentage</b>	Total Marks
2	Joe	1011	IV	O+ve	32	65	86	88	79	79	429	71.5	71.5	600
3	John	2011	IV	B+ve	65	76	92	75	65	85	458	76.33333333	76.4	600
4	Mary	1028	IV	A-ve	32	87	33	33	52	65	302	50.33333333	50.4	600
5	Mark	1072	IV	AB+ve	69	87	82	65	78	85	466	77.66666667	77.7	600
6	Sunan	2874	IV	A-ve	33	90	88	90	65	54	420	70	70	600
7	Jenniffer	2084	IV	B+ve	65	33	34	85	31	33	281	46.83333333	46.9	600
8	Mike	2907	IV	AB+ve	76	91	56	71	94	62	450	75	75	600
9	Tim	2917	IV	AB-ve	44	33	78	70	89	86	400	66.66666667	66.7	600
10	Jeffery	2962	IV	O-ve	77	92	98	60	82	89	498	83	83	600
11	Morgan	1972	IV	O+ve	87	84	55	62	72	91	451	75.16666667	75.2	600
12	Mike	2807	IV	AB+ve	76	91	56	71	94	62	450	75	75	600
13						Micr	oroft Excel				×			
14							63							
15	2 duplicate values found and removed; 11 unique values remain.													
16									01					
17														

In the next part of Excel Data Cleaning, you will understand data parsing from text to column.

## Data Parsing from Text to Column

Sometimes, there is a possibility that one cell might have multiple data elements separated by a data delimiter like a comma. For example, consider that there is one column that stores **address** information.

The address column stores the street, district, state, and nation. Commas separate all the data elements. You must now divide the street, district, state, and nation from the address columns into separate columns.

Excel's inbuilt functionality called "text to column" can achieve this. Now, try an example for the same.

Here, you have the car manufacturer and the car model name separated by space as the data delimiter. The tabular data is shown below.



Select the data, click on the data option in the toolbar and then select "Text to Column", as shown below.

Text	■ Consolidate ■ Relationships 爾 Manage Data Model
Data Tools	
Text to Columns	
Split a single column of text into multiple columns.	Q R
<ul> <li>For example, you can separate a column of full names into separat</li> <li>first and last name columns.</li> </ul>	te
You can choose how to split it up fixed width or split at each comm period, or other character.	: a,
⑦ Tell me more	

A new window will pop up on the screen, as shown below. Select the delimiter option and click on "next". In the next window, you will see another dialogue box.

## DATA ANALYTICS WITH EXCEL- BCV358A

Convert Text to Columns Wizard - Step 1 of 3	?	×
The Text Wizard has determined that your data is Delimited. If this is correct, choose Next, or choose the data type that best describes your o	lata.	
Original data type Choose the file type that best describes your data:		
Fixed width - Fields are aligned in columns with spaces between each	n field.	
Preview of selected data:		
1 Cars 2 Ferrari GTC4 3 Lamborghini Aventador 4 Toyota Prius 5 Tesla Model-X		<b>^</b>
<     Cancel < Back <u>N</u> ext >	<u>F</u> i	> nish

In the new page dialogue box, you will see an option to select the type of delimiter your data has. In this case, you need to select the "space" as a delimiter, as shown below.

Convert Text to Columns Wizard - Step 2 of 3 ?										
This screen lets you set the delimiters your data contains. You can see how your text is affected in the preview below.										
Delimiters         Iab         Semicolon         Comma         Space         Qther:         Data preview										
Cars Ferrari GTC4 Lamborghini Aventador Toyota Prius Tesla Model-X <	>	<b>^</b>								
Cancel < <u>B</u> ack <u>Next</u>	<u>F</u> inis	h								

In the last dialogue box, select the column data format as "General", and the next step should be to click on the finish, as shown in the following image.

## DATA ANALYTICS WITH EXCEL- BCV358A

Convert Text to Columns Wizard -	Step 3 of 3	?	×
This screen lets you select each colu Column data format General <u>Text</u> <u>Date:</u> DMY Do not import column (skip)	umn and set the Data Format. 'General' converts numeric values to numbe to dates, and all remaining values to text. <u>A</u> dvanced	rs, date v	alues
D <u>e</u> stination: \$A\$1			<b>1</b>
Data <u>p</u> review			
General General			
Cars Ferrari GTC4 Lamborghini Aventador Toyota Prius Tesla Model-X		2	
	Cancel < Back Next >	Fini	sh
	Current S Back Mext >		

The final resultant data will be available, as shown below.

$\mathbb{C}_{\mathbb{Z}}$		B State
[1]	Cars	Cars
2	Ferrari	GTC4
; <b>3</b> ;	Lamborghini	Aventador
4	Toyota	Prius
5	Tesla	Model-X
6	Honda	NSX
°, <b>7</b> ,°	Ford	Raptor
8	Chevrolet	Corvette
9	Dodge	Challenger
10	Toyota	Supra
11	BMW	M4
12	Mercedes	300-SL
13	Audi	A6
14	Audi	S8

Followed by Data parsing, in this tutorial about Excel Data Cleaning, you will learn how to delete all formatting.

Another good way of cleaning data in excel is to ensure even formatting or, in some cases, even removing the formatting. The formatting can be as simple as coloring your cells and aligning the text in the cells. It can be a logical condition applied to your cells using <u>Excel's</u> conditional formatting option from the home tab.

However, in situations where you wish to remove the formatting, you can do it in the

following ways. First, try to eliminate the regular formatting. In the previous example, you took the case of car manufacturers and car models data tables with heading cells colored in blue, and the text was center aligned.

1	А	В
1	Cars	Cars
2	Ferrari	GTC4
3	Lamborghini	Aventador
4	Toyota	Prius
5	Tesla	Model-X
6	Honda	NSX
7	Ford	Raptor
8	Chevrolet	Corvette
9	Dodge	Challenger
10	Toyota	Supra
11	BMW	M4
12	Mercedes	300-SL
13	Audi	A6
14	Audi	<b>S8</b>

Now, use the clear option to remove the formats. Select the tabular data as shown below. Select the "home" option and go to the "editing" group in the ribbon. The "clear" option is available in the group, as shown below.



Select the "clear" option and click on the "clear formats" option. This will clear all the formats applied on the table.



1	Α	В
1	Cars	Cars
2	Ferrari	GTC4
3	Lamborghini	Aventador
4	Toyota	Prius
5	Tesla	Model-X
6	Honda	NSX
7	Ford	Raptor
8	Chevrolet	Corvette
9	Dodge	Challenger
10	Toyota	Supra
11	BMW	M4
12	Mercedes	300-SL
13	Audi	A6
14	Audi	S8

The final data table will appear as shown below.

Now, you must learn how to eliminate conditional formatting for cleaning data in Excel. This time, consider a different sheet. You must use the student's details sheet, which includes conditional formatting in Excel.

To eliminate conditional formatting in Excel, select the column or table with conditional formatting as shown below.

	А	В	С	D	E	F	G	Н	1	J	К	L	М	N
1	Name	Roll No	Year	<b>Blood Group</b>	Engg 1	Engg 2	Engg 3	Engg 4	Engg s	Engg 6	<b>Marks Obtained</b>	Percentage	Round-off Percentage	Total Marks
2	Joe	1011	IV	O+ve	32	65	86	88	79	79	429	71.5	71.5	600
3	John	2011	IV	B+ve	65	76	92	75	65	85	458	76.33333333	76.4	600
4	Mary	1028	IV	A-ve	32	87	33	33	52	65	302	50.33333333	50.4	600
5	Mark	1072	IV	AB+ve	69	87	82	65	78	85	466	77.66666667	77.7	600
6	Sunan	2874	IV	A-ve	33	90	88	90	65	54	420	70	70	600
7	Jenniffer	2084	IV	B+ve	65	33	34	85	31	33	281	46.83333333	46.9	600
8	Mike	2907	IV	AB+ve	76	91	56	71	94	62	450	75	75	600
9	Tim	2917	IV	AB-ve	44	33	78	70	89	86	400	66.66666667	66.7	600
10	Jeffery	2962	IV	O-ve	77	92	98	60	82	89	498	83	83	600
11	Morgan	1972	IV	O+ve	87	84	55	62	72	91	451	75.16666667	75.2	600
12	Mike	2807	IV	AB+ve	76	91	56	71	94	62	450	75	75	600

Then navigate to "Home", and select conditional formatting.



Then in the dialogue box, select the clear rules option. Here, you can either choose to eliminate rules only in the selected cells or eliminate rules from the entire column.

Conditional Formatting ~ Table ~ Styles	~	Insert Delete Format	∑ AutoSum ↓ Fill ✓ Clear ✓	
Highlight Cells Rules	>	Cells	Ed	
Top/Bottom Rules	>	М	Ν	
c		off Percentage	Total Marks	
Data Bars	>	71.5	600	
		76.4	600	
Color <u>S</u> cales	>	50.4	600	
		77.7	600	
Icon Sets	>	70	600	
		46.9	600	
🛄 New Rule		75	600	
Clear Rules	>	Clear Rules from S	elected Cells	
Manage <u>R</u> ules		Clear Rules from E	ntire Sheet	
75.16666667		Clear Rules from <u>T</u> his Table		
75		Clear Rules from T	This <u>P</u> ivotTable	

## After you eliminate all conditions, the resultant table would look as follows.

	Α	В	С	D	E	F	G	Н	1	J	К	L	М	N
1	Name	Roll No	Year	Blood Group	Engg 1	Engg 2	Engg 3	Engg 4	Engg s	ہ Engg	<b>Marks Obtained</b>	Percentage	<b>Round-off Percentage</b>	Total Marks
2	Joe	1011	IV	O+ve	32	65	86	88	79	79	429	71.5	71.5	600
3	John	2011	IV	B+ve	65	76	92	75	65	85	458	76.33333333	76.4	600
4	Mary	1028	IV	A-ve	32	87	33	33	52	65	302	50.33333333	50.4	600
5	Mark	1072	IV	AB+ve	69	87	82	65	78	85	466	77.66666667	77.7	600
6	Sunan	2874	IV	A-ve	33	90	88	90	65	54	420	70	70	600
7	Jenniffer	2084	IV	B+ve	65	33	34	85	31	33	281	46.83333333	46.9	600
8	Mike	2907	IV	AB+ve	76	91	56	71	94	62	450	75	75	600
9	Tim	2917	IV	AB-ve	44	33	78	70	89	86	400	66.66666667	66.7	600
10	Jeffery	2962	IV	O-ve	77	92	98	60	82	89	498	83	83	600
11	Morgan	1972	IV	O+ve	87	84	55	62	72	91	451	75.16666667	75.2	600
12	Mike	2807	IV	AB+ve	76	91	56	71	94	62	450	75	75	600

You can always use a shortcut method to eliminate the conditional formatting in Excel. It is by pressing the sequential combination of the following keys as follows.

ATL + E + A + F

Next, in this Excel Data Cleaning tutorial, you will learn about Spell Check.

## **Spell Check**

The feature of checking the spelling is available in MS Excel as well. To check the spellings of the words used in the spreadsheet, you can use the following method. Select the data cell, column, or sheet where you want to perform the spell check.

$\mathbb{R}^{2}$	A
:1:	Farrari
2	Lammborghini
3	Toyota
4	Tessla
5	Honda
° <mark>6</mark> °	Ford
7	Chevrolet
8	Dodge
9	Toyota
10	Audi
11	Marcedes

Now, go to the review option as shown below.



Microsoft Excel will automatically show the correct spelling in the dialogue box, as shown below. You can replace the words as per the requirement as shown below.

Spelling: English (India)		? ×	
Not in <u>D</u> ictionary:			
Farrari		lgnore Once	
		Ignore All	
		Add to Dictionary	
Suggestio <u>n</u> s:			
Ferrari	<u>^</u>	<u>C</u> hange	
Ferraris Ferrara		Change A <u>l</u> l	
	~	AutoCo <u>r</u> rect	
Dictionary language: English (India)	~		
Options	Undo Last	Cancel	

The final reviewed data table will like the one below.

	Α	В	С	D	E	F	
1	Ferrari						
2	Lamborghini						
3	Toyota						
4	Tesla						
5	Honda	Microsoft Excel				×	
6	Ford						
7	Chevrolet	Spell check complete. You're good to go!				d to go!	
8	Dodge						
9	Toyota	ОК					
10	Audi						
11	Mercedes						

In the next segment of this Excel Data Cleaning tutorial, you will learn about changing the text case.

Change Case - Lower/Upper/Proper

You can manipulate the data in the <u>Excel worksheet</u> in terms of character cases as per the requirements. To apply case changes, you can follow the following steps.

Select the table or columns that need the case to be changed, as shown below.

( <b>.1</b> .)	Ferrari
° 2 °	Lamborghini
° 3 °	Toyota
° 4 °	Tesla
5	Honda
6	Ford
° 7 (	Chevrolet
8	Dodge
° 9	Toyota
10	Audi
11	Mercedes

Select the cell next to the column and apply the formula as per the requirement, as shown below.

<del>.</del> ♪ ×	$\checkmark f_x$	=UPPER(	A1)
В	с	D	E
FERRARI			

=UPPER(cell address) - for Upper case conversion

=LOWER(cell address) - for Lower case conversion

=PROPER(cell address) - for Sentence case conversion

Now, you can drag the cell can to the last row, as shown below.

	А	В	
1	Ferrari	FERRARI	
2	Lamborghini	LAMBORG	HIN
3	Toyota	ΤΟΥΟΤΑ	
4	Tesla	TESLA	
5	Honda	HONDA	
6	Ford	FORD	
7	Chevrolet	CHEVROL	Т
8	Dodge	DODGE	
9	Toyota	ΤΟΥΟΤΑ	
10	Audi	AUDI	
11	Mercedes	MERCEDE	
12			

The final data table will appear as shown below.

	A	<b>B</b>
: <b>1</b> .1	Ferrari	FERRARI
° 2 (	Lamborghini	LAMBORGHINI
° 3 °	Toyota	ΤΟΥΟΤΑ
° 4 °	Tesla	TESLA
; <b>5</b> ;	Honda	HONDA
° 6	Ford	FORD
°, <b>7</b> ,°	Chevrolet	CHEVROLET
8	Dodge	DODGE
° 9	Toyota	ΤΟΥΟΤΑ
10	Audi	AUDI
11	Mercedes	MERCEDES

Now that you learned spell check, in the upcoming section of Excel Data Cleaning, you will learn how to Highlight Errors in an Excel spreadsheet.

## Highlight Errors

Highlighting errors in an Excel spreadsheet is helpful to find or sort out the erroneous data with ease. You can do error Highlighting with the help of conditional formatting in Excel. Here, you must consider the student data set as an example.

Imagine that you are interviewing all the students. There are eligibility criteria. You can shortlist the students if they have 60% aggregate marks. Now, apply conditional formatting and sort out the students who are eligible and not eligible.

First, select the aggregate/percentage column as shown below.

М	
Percentage	Ro
71.5	
68	
59	
68.16666667	
62.83333333	
52	
57.16666667	
79.33333333	
67.66666667	
63.16666667	
	扫

Select "Home", and in the Styles group, select conditional formatting, as shown below.



In the conditional formatting option, select the highlight option, and in the next drop-down, select the less than an option as shown below.



In the settings window, you will find a slot to provide the aggregate as "60" percent and press ok.

Less Than				?	$\times$
Format cells that are LESS THAN:					
60	1	with	Light Red Fill with Dark	Red Tex	t 🗸
			ОК	Canc	el

Excel will now select and highlight cells with an aggregate of less than 60 percent. In the next part of Excel Data Cleaning, you will understand the trim function.

### **TRIM Function**

The TRIM function is used to eliminate excess spaces and tab spaces in the Excel worksheet cells. The excessive blank spaces and tab spaces make the data hard to understand. Using the "TRIM" function can eliminate these excessive blank spaces.

Select the data cells with excessive blank spaces and tab spaces. Now, select a new cell adjacent to the first cell.

Apply the TRIM() function and drag the cell as shown below.

$\mathbb{R}^{2}$	Α
<b>→</b> 1	Hi, Welcome to Data Analytics
2	In Excel
3	This chapter
4	is based
5	on TRIM () Method

It shows the final data after the elimination of the excess space as follows.

B1	$\cdot$ $\cdot$ $\cdot$ $\cdot$ $\cdot$ $\cdot$ $\cdot$ $\cdot$ $f_x$	=TRIM(A1)					
		n					
	A	В					
1	Hi, Welcome to Data Analytics	Hi, Welcome to Data Analytics					
2	In Excel	In Excel					
3	This chapter	This chapter					
4	is based	is based					
5	on TRIM () Method	on TRIM () Method					

Next, in the Excel Data Cleaning tutorial, you will look at the Find and Replace function.

Find and Replace

Find and Replace will help you fetch and replace data in the entire worksheet to help in organizing and cleaning data in Excel. Consider the employee data example.

Here, try to fetch an employee with the name Joe and try to rename or replace his name with John, after changing his first name.

	А	В	С	D	E	F	G	Н	I
1					Emplo	yee Det	ails	·	
2									
3	S no	Name	EMP No	Designation	Salary	Hike %	<b>New Salary</b>	<b>Blood Group</b>	Phone number
4	1	Joe	1011	CEO	100000	15%	115000	O+ve	289749782
5	2	John	2011	Software Developer	15000	15%	17250	B+ve	382741987
6	3	Mary	1028	Tester	19000	15%	21850	A-ve	222147868
7	4	Mark	1072	Finance	20000	15%	23000	AB+ve	656398101
8	5	Sunan	2874	Finance	15000	15%	17250	A-ve	164192719
9	6	Jenniffer	2084	Tester	29000	15%	33350	B+ve	688578990
10	7	Mike	2907	Marketing	19000	15%	21850	AB+ve	157378911
11	8	Tim	2917	Marketing	12000	15%	13800	AB-ve	538975791
12	9	Jeffery	2962	Software Developer	10000	15%	11500	O-ve	745932616
13	10	Morgan	1972	Tester	29000	15%	33350	O+ve	274729436

The "find and replace" option is present in the home ribbon in the editing group, as shown below.

te Format	∑ AutoSum ~ A ↓ Fill ~ Sort & ✓ Clear ~ Filter ~ Editing	Find & Analyze Select ~ Data
-		~ <u>r</u> ind
Replace (	Ctrl+H)	Gc Replace
Search for and replac	text you'd like to change, e it with something else.	$\rightarrow \underline{G}$ o To Go To <u>S</u> pecial
		Form <u>u</u> las
		<u>N</u> otes
		Conditional Formatting
		Co <u>n</u> stants
		Data <u>V</u> alidation
		Select Objects
		Selection Pane

Click on the option, and a new window will open, where you can enter the data to be fetched and enter the text you need to replace, as shown below.

Find and Replac	e			?	×
Fin <u>d</u> Rep	lace				
Fi <u>n</u> d what:	Joe				$\sim$
Replace with:	John				$\sim$
				Op <u>t</u> ions	>>
Replace <u>A</u> ll	<u>R</u> eplace	F <u>i</u> nd All	<u>F</u> ind Next	Clo	ose

	Α	В	С	D	Е	F	G	H	
1					Emplo	yee Det	ails		
2									
3	S no	Name	EMP No	Designation	Salary	Hike %	New Salary	<b>Blood Group</b>	Phone number
4	1	John	1011	CEO	100000	15%	115000	O+ve	289749782
5	2	John	2011	Software Developer	15000	15%	17250	B+ve	382741987
6	3	Mary	1028	Tester	19000	15%	21850	A-ve	222147868
7	4	Mark	1072	Finance	20000	15%	23000	AB+ve	656398101
8	5	Sunan	2874	Finance	15000	15%	17250	A-ve	164192719
9	6	Jenniffer	2084	Tester	29000	15%	33350	B+ve	688578990
10	7	Mike	2907	Marketing	19000	15%	21850	AB+ve	157378911
11	8	Tim	2917	Marketing	12000	15%	13800	AB-ve	538975791
12	9	Jeffery	2962	Software Developer	10000	15%	11500	O-ve	745932616
13	10	Morgan	1972	Tester	29000	15%	33350	O+ve	274729436

# Click on "replace all", and it will replace the text. The final dataset will be as shown below.

## **FLASH FILL AND TEXT TO COLUMNS**

Separate the country using Flash Fill Kicks

Participants Ronnie Anderson, UK Tom Boone, Canada Sally Brook, USA Jeremy Hill, Australia Mattias Waldau, USA Robert Furlan, France David White, UK

Solutions:



	А	В	С		D	E
1	Participants	Country				
2	Ronnie Anderson, UK	UK				
3	Tom Boone, Canada	Canada		Flash	Fill Options	
4	Sally Brook, USA	USA	<b>5</b> -			
5	Jeremy Hill, Australia	Australia	6	Undo	Elash Fill	
6	Mattias Waldau, USA	USA				
7	Robert Furlan, France	France	× .	ACCE	pr suggestio	ns
8	David White, UK	UK		Selec	t all 0 <u>b</u> lank (	cells
9				Selec	t all 6 <u>c</u> hang	ed cells

	А	В
1	Address	Zip code
2	St-Joris Weert 3051 Belgium	3051
3	Illinois, 60606, USA	60606
4	California, 92618, USA	92618
5	Madrid 28014 Spain	28014
6	San Francisco, CA, 94105, USA	94105

# **Experiment No: 05**

# Date:

## **ANALYZING DATA USING SPREADSHEETS**

#### Maximum and Minimum Value

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2					
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5	Las Vegas	35,250	28,125	37,455	
6	Mexico DF	20,850	17,200	27,010	
7	Paris	33,710	29,175	35,840	
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2										
3	Excursion	Jan	Feb Ma		r					
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5	Las Vegas	35,250	28,125	37,4	55					
6	Mexico DF	20,850	17,200	27,0	10					
7	Paris	33,710	29,175	35,84	40					
8	Tokyo			11,49	90					
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# DATA ANALYTICS WITH EXCEL- BCV358A

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Pi Cli	Calibi aste •	$\begin{array}{c c} \mathbf{ri} & \mathbf{v} & 14 & \mathbf{v} \\ \hline I & \underline{\cup} & \mathbf{v} &   & A^{^{*}} & A^{^{*}} \\ \hline \frac{\partial \mathbf{h}}{\partial \mathbf{v}} & \mathbf{v} & \underline{A} & \mathbf{v} \\ \hline \mathbf{Font} & \mathbf{v} \end{array}$	≡ ≡ ± ₹₽ ≡ ≡ ≡ ⊡ + €≣ ∋≡   ≫ + Alignment	Number	Conditional Format Format as Table * Cell Styles * <b>Styles</b>	ting - Image Insert	$\begin{array}{c c} & \sum & & & \mathbb{A}_{\mathbb{Z}} & \\ & & & \mathbb{Z} & & \\ & & & & \mathbb{A}_{\mathbb{Z}} & \\ & & & & & & \mathbb{A}_{\mathbb{Z}} & \\ & & & & & & & \mathbb{A}_{\mathbb{Z}} & \\ & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & & \\ & & & & & & & & & & \\ & & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & & & \\ & & & & & & & & & & \\ & & & & & & & & & & \\ & & & & & & & & & & \\ & & & & & & & & & & \\ & & & & & & & & & & & \\ & & & & & & & & & & \\ & & & & & & & & & & \\ & & & & & & & & & & \\ & & & & & & & & & & \\ & & & & & & & & & & \\ & & & & & & & & & & \\ & & & & & & & & & & \\ & & & & & & & & & & & \\ & & & & & & & & & & & \\ & & & & & & & & & & & \\ & & & & & & & & & & & \\ & & & & & & & & & & & & \\ & & & & & & & & & & & & \\ & & & & & & & & & & & & & \\ & & & & & & & & & & & & & & \\ & & & & & & & & & & & & & & & & & \\ & & & & & & & & & & & & & & & & \\ & & & & & & & & & $
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2							
3	Excursion	Jan	Feb	Mar			
4	Beijing	6,010	7,010	6,520			
5	Las Vegas	35,250	28,125	37,455			
6	Mexico DF	20,850	17,200	27,010			
7	Paris	33,710	29,175	35,840			
8	Tokyo	12,510					
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# Exercise 8: Create the Pivot Tables

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2	1 Chair	Fast	GURUPRASH ANTH M	16	₹ 30.000.00	₹ 10,000,00													
3	2 Table	South	BANASHREE	20	₹ 20,000,00	₹ 20,000,00													
4	3 Board	West	CHETHAN M	22	₹ 30,000.00	₹ 10.000.00													
5	4 Marker	West	K N UDAY	24	₹ 30,000.00	₹ 25,000.00													
6	5 Laptop	East	L SUHAS	18	₹ 80,000.00	₹ 40,000.00													
7	6 Projector	North	R C RAMACHAND RA GOWDA	20	₹ 70,000.00	₹ 50,000.00													
8	7 Switch	East	SANTHOSH KUMAR D	14	₹ 30,000.00	₹ 20,000.00													
9	8 Lights	South	A CHARAN	13	₹ 30,000.00	₹ 10,000.00													
10	9 Camera	West	BHARATH S KADAM	25	₹ 60,000.00	₹ 10,000.00													
11 12	10 Pendrive 11 Chair	West East	GAUTHAM K H SRINITISH	22	₹ 50,000.00 ₹ 30,000.00	₹ 15,000.00 ₹ 20,000.00													

#### Solutions:

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4	5 Board	West	CHETHAN M	22	₹ 30,000.00	₹ 10,000.00						_	Product		<u></u>
-	4 Marker	West	K N UDAY	24	₹ 30,000.00	₹ 25,000.00							Region		
	Laptop	East	P C	18	< 80,000.00	< 40,000.00						- 1	Name Name		
			RAMACHAND										Units		
7	6 Projector	North	RA GOWDA	20	₹ 70.000.00	₹ 50.000.00							Sales		
-			SANTHOSH									_	Profit		
3	7 Switch	East	KUMAR D	14	₹ 30,000.00	₹ 20,000.00	F	Row Labels	Sum of Sales	Sum of Profit Su	um of Profit2		More Tables		Ŧ
9	8 Lights	South	A CHARAN	13	₹ 30,000.00	₹ 10,000.00	1	CHARAN	30000	10000	10000				
			BHARATH S										Drag fields between areas be	elow:	
0	9 Camera	West	KADAM	25	₹ 60,000.00	₹ 10,000.00	E	BANASHREE B	30000	20000	20000		T Filters	II Columns	
1 1	0 Pendrive	West	GAUTHAM K	22	₹ 50,000.00	₹ 15,000.00	E	BHARATH S KADAM	60000	10000	10000	_		∑ Values	
2 1	1 Chair	East	H SRINITISH	24	₹ 30,000.00	₹ 20,000.00	(	CHETHAN M	30000	10000	10000				
3 1	2 Table	North	HARSHITHA S	26	₹ 80,000.00	₹ 10,000.00	(	GAUTHAM K	50000	15000	15000			050000	
			KEERTHANA										≡ Rows	Σ Values	
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Exercise 9: Separate the country using Flash Fill Kicks



# Solutions:

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Tom Boon	ie, Cana	ada			
Sally Broo	k, USA				
Jeremy Hi	II, Aust	ralia			
Mattias W	/aldau,	USA			
Robert Fu	rlan, Fr	ance			
David Wh	ite, UK				

	Α	В	C	;	D	E
1	Participants	Country				
2	Ronnie Anderson, UK	UK				7
3	Tom Boone, Canada	Canada		Flash	Fill Options	
4	Sally Brook, USA	USA	<b>I</b> - 🔁			
5	Jeremy Hill, Australia	Australia	6	Undo	Elash Fill	
6	Mattias Waldau, USA	USA		Acces		
7	Robert Furlan, France	France	×	Acce	pt suggestio	ns
8	David White, UK	UK		Selec	t all 0 <u>b</u> lank	cells
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	А	В
1	Address	Zip code
2	St-Joris Weert 3051 Belgium	3051
3	Illinois, 60606, USA	60606
4	California, 92618, USA	92618
5	Madrid 28014 Spain	28014
6	San Francisco, CA, 94105, USA	94105

Date:

## **VLOOKUP AND HLOOKUP**

Determine the VLOOKUP in the given data.

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13	ш	1KG22CV012	DEEPAK SHARMA					-											
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Solution :

# The command used for to search in another sheet

# =VLOOKUP(D4,Sheet2!\$D\$3:\$E\$30,2,FALSE)

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Exercise 6: Fetch the marks of student D in Management, in the given data using HLOOKUP .

A	В	С	D	E	F
Student name	Α	В	С	D	E
Accounts	75	65	70	60	59
Economics	65	72	78	89	67
Management	70	68	90	72	58
Mathematics	80	90	75	65	87

Solution :

А	В	С	D	E	F	G	Н
Student roll no	Α	В	С	D	E		
Accounts	75	65	70	60	59		
Economics	65	72	78	89	67		
Management	70	68	90	72	58		
Mathematics	80	90	75	65	87		
Fetch Marks of D in							
Management	=Hlookup	(					
	HLOOKU	P(lookup_va	<b>alue</b> , table_a	rray, row_ind	dex_num, [rar	nge_lookup])	

A	В	С	D	E	F	G	Н
Student name	Α	В	С	D	E		
Accounts	75	65	70	60	59		
Economics	65	72	78	89	67		
Management	70	68	90	72	58		
Mathematics	80	90	75	65	87		
Fetch Marks of D in							
Management	=hlookup(	"D"					
	HLOOKU	P(lookup_va	alue, table_a	rray, row_inc	lex_num, [rang	ge_lookup])	]
	L						-

A	В	С	D	E	F	G	Н
Student name	Α	В	С	D	E		
Accounts	75	65	70	60	59		
Economics	65	72	78	89	67		
Management	70	68	90	72	58		
Mathematics	80	90	75	65	87		
Fetch Marks of D in							
Management	=hlookup(	"D",A1:F5					
	HLOOKU	P(lookup_va	lue, table_a	rray, row_ind	dex_num, [ran	ge_lookup]	
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Student name	Α	В	С	D	E	
Accounts	75	65	70	60	59	
Economics	65	72	78	89	67	
Management	70	68	90	72	58	
Mathematics	80	90	75	65	87	
Fetch Marks of D in						
Management	=HLOOKU	P("D",A1:F	5,4			
	HLOOKU	P(lookup va	lue, table ar	ray, row ind	ex num, [ran	nge lookup])

Student name	Α	В	С	D	E						
Accounts	75	65	70	60	59						
Economics	65	72	78	89	67						
Management	70	68	90	72	58						
Mathematics	80	90	75	65	87						
Fetch Marks of D in											
Management	=HLOOKU	P("D",A1:F	5,4,)								
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# B8 • [= HLOOKUP("D",A1:F5,4,FALSE )

1	А	В	С	D	E	F	G
1	Student name	Α	В	С	D	E	
2	Accounts	75	65	70	60	59	
3	Economics	65	72	78	89	67	
4	Management	70	68	90	72	58	
5	<b>Mathematics</b>	80	90	75	65	87	
6							
7							
8	Fetch Marks of D in Management	72					
9							

# **Experiment No: 07**

## Date:

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# Solution:

# Mobile Phones: Bottom Will be present 50 Nos

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# Exercise 11 : Draw the Pie Chart of E gadgets Purchased

# 11 DATA ANALYTICS WITH EXCEL-BCV304A

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# Filtering option need to be done and determine the count in separate page.

Mobile Phones	50
Laptops	15
Earbuds	3
Smart Watch	2



Defective Product	44
Malfunctioning of Product	30
Appearance Mismatch with display on website	13



Positive	75
Negative	22



Replacement of Product	62
Refund of money	34

