Key Takeaways

- Lookup functions are powerful and versatile tools because they eliminate the need to copy or recreate data that exists in other worksheets or workbooks.
- The VLOOKUP function will look for the lookup value vertically down the first column of the table array range.
- The lookup value must exist in the first column of the table array range when using the VLOOKUP function or the function will produce the #N/A error.
- The HLOOKUP function will look horizontally across the first row of the table array range to find the lookup value.
- The HLOOKUP function will produce the #N/A output if the lookup value is not in the first row of the table array range.
- If the "range_lookup" argument is defined with the word "TRUE", the data in the table array range for the VLOOKUP function must be sorted in ascending order (smallest to largest) based on the values in the first column, and for the HLOOKUP function the data must be sorted in ascending order from left to right based on the values in the first row.
- If you are copying and pasting a VLOOKUP or HLOOKUP function to other cell locations on a worksheet, there should be an absolute reference placed on the table array range.
- Icon Sets are a conditional formatting feature that can be used to apply data visualization techniques to a dataset.
- The "value" argument of the ISBLANK function should be defined with only one cell location and not a cell range.

6.3 Chapter Assignments and Test

Data Analytics (Skills Review)

Retail Inventory Exceptions (Comprehensive Review)

Starter File Name: Chapter 6 DA Exercise 1

Digital Downloads

Chapter 6 DA Exercise 1.xlsx
https://catalog.flatworldknowledge.com/a/34751/Chapter_6_DA_Exercise_1-42fe.xlsx

Difficulty: Level 2

Exception analytics plays a significant role in the evaluation of inventory for companies in the retail industry. Large retail corporations may service thousands of customers in hundreds of stores every day. Suppyling these stores with the appropriate amount of inventory is a considerable challenge. Allowing inventory levels to get too low can jeopardize sales as customers may not find the items they wish to buy. Exception analytics are often used to evaluate sales and inventory levels by store to prioritize inventory shipments. The purpose of this exercise is to utilize the Excel skills covered in this chapter to create various exception alerts that will help a retailer organize and prioritize inventory store shipments.

Begin the exercise by opening the file named Chapter 6 DA Exercise 1. Questions that are preceded with the letters **KO** indicate you must only use your keyboard and not your mouse to execute the required skill.

1. Enter a SUM function in cell G2 on the Sales and Inventory worksheet. The SUM function should sum the values in the Inventory Value column. Add cell capacity to the function to include row 40.
2. Copy cell G2 and paste it into cells H2 and I2.
3. Enter an HLOOKUP function in cell B4 on the Sales and Inventory worksheet that will show the region name from the Region Plan worksheet. The "lookup_value" argument should be defined with cell A4 on the Sales and Inventory worksheet. The "table_array" argument should be the range B2:E5 on the Region Plan worksheet. Place an absolute reference on this range. The "row_index_num" argument should be the number 2 and the "range_lookup" argument should be the word "FALSE".
4. Copy cell B4 and paste it into the range B5:B27.
5. Enter a VLOOKUP function in cell E4 on the Sales and Inventory worksheet that will show the city for each store from the Store Details worksheet. The "lookup_value" argument should be defined with cell C4 on the Sales and Inventory worksheet. The "table_array" argument should be the range A3:F26 on the Store Details worksheet. Place an absolute reference on this range. The "col_index_num" argument should be the number 5 and the "range_lookup" argument should be the word "FALSE".
6. Copy cell E4 and paste it into the range E5:E27.
7. Enter a formula in cell J4 that divides cell I4 by I2. Place an absolute reference on cell I2.
8. Copy cell J4 and paste it into the range J5:J27.
9. Enter an IF function in cell M4 to determine if a store is a high growth exception. If the value in cell K4 is greater than 5%, then the output of the function should be the word "Growth". Otherwise, there should be no output for the function. The "logical_test" argument should be K4>5%. The "value_if_true" argument should be the word "Growth" and must be enclosed in quotations. The "value_if_false" argument should be two quotations to leave the cell blank.
10. Copy cell M4 and paste it into the range M5:M27.
11. Begin an IF function in cell N4 on the Sales and Inventory worksheet. The purpose of this function is to determine if it is OK to deliver inventory to a store or if the delivery should be postponed. It can be a problem for smaller stores if too much inventory is delivered. For this company, a small store is 10,000 square feet.
12. Define the "logical_test" argument of the IF function by using the AND function. The first logical test of the AND function should determine if cell F4 is equal to 10000. The second logical test of the AND function should determine if cell L4 is greater than 8. Cell L4 contains the weeks of supply, which is a calculation that shows how fast the store is selling its current inventory. A high weeks of supply indicates that a store may have too much inventory relative to sales.
13. Define that "value_if_true" argument of the IF function with the word "Hold". Based on the results of the AND function, if a store is 10,000 square feet and the weeks of supply is greater than 8, the output of the function should be the word "Hold".
14. Define the "value_if_false" argument with the word "OK".
15. Copy cell N4 and paste it into the range N5:N27.
16. Enter a nested IF function in cell O4 to identify the inventory status for each store. The inventory status will be determined based on the value in the Weeks of Supply column. The logical test of the first IF function should determine if cell L4 is less than 4. If this logical test is true, the output of the function should be the word "Low". Start a second IF function in the "value_if_false" argument of the first IF function. The logical test of the second IF function should determine if the value in cell L4 is greater than 8. If this logical test is true, the output of the function should be the word "High". If this logical test is not true, the function should output the word "Normal". The word "Normal" should be used to define the "value_if_false" argument of the second IF function.
17. Copy cell O4 and paste it into the range O5:O27.
18. Enter an IF function in cell P4 that determines if a store should be identified as a priority delivery. Use the OR function to define the "logical_test" argument of the IF function. The first logical test of the OR function should determine if cell K4 is greater than 8%. The second logical test of the OR function should determine if cell L4 is less than 4. If the output

of the OR function is true, the output of the IF function should be the word "Priority". If the output of the OR function is not true, the IF function should leave the cell blank. Therefore, define the "value_if_false" argument of the IF function with two quotations.

19. Copy cell P4 and paste it into the range P5:P27.
20. Enter an IF function in cell A2 that will alert the user if data has been added to the worksheet that exceeds the cell capacity in the SUM functions in the range G2:I2. Use the ISBLANK function in the "logical_test" argument of the IF function. The ISBLANK function should determine if cell A41 is blank. If the output of the ISBLANK is true, then the output of the IF function should be a blank cell. If the output of the ISBLANK function is false, the output of the function should be: Report totals are missing data!.
21. Apply the traffic light icon set from the conditional formatting list of options to the Weeks of Supply column. Highlight the range L4:L40 to add cell capacity to this conditional format. After selecting the More Rules option from the Icon Sets sub menu, make the following rule change to the green and yellow circles in the New Formatting Rule dialog box: Set the type for each circle to Number. Set the value for the green circle to 8 and set the value for the yellow circle to 4. Any weeks of supply that is less than 4 will be assigned a red circle. These are stores that might be in danger of running out of inventory.
22. Save and close your workbook.

Payroll Taxes for a Medical Group

Starter File Name: Chapter 6 DA Exercise 2

Digital Downloads

Chapter 6 DA Exercise 2.xlsx
https://catalog.flatworldknowledge.com/a/34751/Chapter_6_DA_Exercise_2-7229.xlsx

Difficulty: Level 2

The Excel skills demonstrated in this chapter for the purpose of conducting exception analytics can also be used to calculate payroll taxes and benefits for the employees of a medical group. Medical groups are common in the health care industry and can range in a variety of sizes. The defining trait of a medical group is that more than one doctor is on the staff for a particular practice, which creates more flexible hours for patients and physicians. In addition, a medical group can provide a variety of medical services in one location. The purpose of this exercise is to use the Excel and exception analytics skills covered in this chapter to prepare a payroll tax and benefits worksheet.

Begin the exercise by opening the file named Chapter 6 DA Exercise 2. Questions that are preceded with the letters **KO** indicate you must only use your keyboard and not your mouse to execute the required skill.

1. Set the Freeze Panes command on the Payroll Details worksheet so that rows 1 and 2 and columns A and B are locked in place while you scroll through the worksheet.
2. Enter an IF function in cell G3 on the Payroll Details worksheet to calculate the Social Security tax. Social Security funds are used by the government to provide income for people who are retired, a beneficiary of a retiree, or disabled. An employer must withhold 6.2% of an employee's weekly pay for Social Security. However, an employee's salary is taxed up to $100,000. The logical test of the IF function should assess if the value in the Pay Year to Date column is greater than or equal to 100000. If the logical test is true, the output of the function should be 0. Otherwise, the function should multiply the value in the Gross Pay This Week by 6.2%. Copy and paste the function into the range G4:G22.
3. Enter a formula in cell H3 on the Payroll Details worksheet that calculates the Medicare Tax. Medicare funds are used by the government to provide medical financial support to senior citizens. Your formula should multiply the Gross Pay This Week by 1.45%. Copy and paste this formula into the range H4:H22.

the Transactions worksheet. Since there are no user inputs required, this worksheet can be protected so the formulas and functions used on the report are not inadvertently changed or deleted. The following reviews how this is accomplished.

1. Open the Summary worksheet.
2. Click the Protect Sheet button in the Review tab of the Ribbon.
3. Click the OK button on the Protect Sheet dialog box. This will protect the worksheet from being changed. However, the worksheet protection can easily be turned off. If a stronger data internal control is needed, a password could be entered in the Protect Sheet dialog box which would be required to turn off the worksheet protection.

Keyboard Only

Current Date

- Hold the CTRL key and tap the semicolon ; key.

Current Time

- Hold the CTRL key and the SHIFT key and tap the colon : key.

Go To Dialog Box

- Hold the CTRL key and tap the G key.

Merge Cells Across

- Tap the ALT key and then tap the H, M, and A keys.

Key Takeaways

- READ ME worksheets can serve as a data internal control by providing pertinent information about a workbook.
- The Go To command is a convenient way to jump to any cell location in a big dataset.
- When adding cell capacity to functions, an alert should be added that warns the user when data is added to a workbook that exceeds the cell range used in functions.
- Worksheet protection should be used when there are no user inputs required for a report that summarizes a big dataset.

8.6 Chapter Assignments and Test

Data Analytics (Skills Review)

Identifying Inventory Discrepancies (Comprehensive Review)

Starter File Name: Chapter 8 DA Exercise 1

Digital Downloads

Chapter 8 DA Exercise 1.xlsx

https://catalog.flatworldknowledge.com/a/34751/Chapter_8_DA_Exercise_1-bd6d.xlsx

Difficulty: Level 2

Many retailers have return policies that may allow customers to return merchandise several months after a purchase. However, a common requirement is that the item returned must have been purchased at one of the company's stores and must be an item that is sold by the company. In some cases return errors can occur such that a cashier accepts an item for return that is not sold by the store. If the store does not require a receipt, these returns can be done intentionally as a way to pilfer money from the company. These types of returns may also be the result of collusion between a customer and a store employee to pilfer money from the store. To identify if this is happening, inventory discrepancies can be investigated using data analytics.

The purpose of this exercise is to use the new skills demonstrated in this chapter to identify inventory return discrepancies for a hypothetical retailer. Begin the exercise by opening the file named Chapter 8 DA Exercise 1. Questions that are preceded with the letters **KO** indicate you must only use your keyboard and not your mouse to execute the required skill.

1. **KO** Change the font style to Arial for the entire dataset in the Inv Transactions worksheet.
2. **KO** Apply the bold font and Wrap Text alignment to the range A1:H1.
3. **KO** Apply the Accounting format to all the data in the Amount column.
4. **KO** Insert a new worksheet into the workbook and change the worksheet tab name to Data Copy.
5. **KO** Copy the entire dataset in the Inv Transactions worksheet and paste it into the Data Copy worksheet.
6. **KO** Change the width to 15 points for columns C, D, E, F, G, and H on the Data Copy worksheet.
7. **KO** Open the Inv Transactions worksheet.
8. In cell I1 on the Inv Transactions worksheet, type the column heading "Region".
9. Enter a RIGHT function in cell I2 that will show the last two characters of the entry in cell A2. Define the "text" argument with cell A2 and define the "[num_chars]" argument with the number 2. The last two characters for the data shown in the District column is the abbreviation of the region. For example, district 10NE is district 10 in the Northeast region. The output of this function will allow the dataset to be summarized by region.
10. Copy cell I2 and paste it into all of the rows in the dataset by double clicking the Fill Handle.
11. In cell J1, type the column heading "Week".
12. Enter the WEEKNUM function in cell J2 that will show the week number related to the date in cell C2. Define the "serial_number" argument with cell C2. Define the "[return_type]" argument with the number 2, which assumes that Monday is the first day of the week. The output of this function will be useful if additional data is added to the dataset.
13. Copy cell J2 and paste it into all of the rows in the dataset by double clicking the Fill Handle.
14. In cell K1, type the column heading "Return Amount".
15. Enter an IF function in cell K2 that will show the absolute value of the returns in the Amount column. The logical test of the function should evaluate if cell F2 is less than 0. If the logical test is true, define the "[value_if_true]" argument with the ABS function. Define the "number" argument of the ABS function with cell F2. If the logical test is false, the output of the IF function should be 0.
16. Copy cell K2 and paste it into all of the rows in the dataset by double clicking the Fill Handle.
17. Click cell K1 and add a comment by clicking the New Comment button in the Review tab of the Ribbon. When the comment box opens, type the following: "Return amounts are shown as positive values". Click cell I1 to close the comment box.
18. In cell L1, type the column heading "Sale Amount".
19. Enter an IF function in cell L2 that shows just the positive values (sale transactions) in the Amount column. The logical test of the function should evaluate if cell F2 is greater than zero. If the logical test is true, define the "[value_if_true]" argument with cell F2. If the logical test is false, the output of the IF function should be 0.
20. Copy cell L2 and paste it into all of the rows in the dataset by double clicking the Fill Handle.

21. Sort the entire dataset in ascending order based on the following column sequence: District, Store, and Date. Highlight the entire dataset and then click the Sort button in the Data tab of the Ribbon. This is a critical step that will be required to eliminate the repeating values in the Store Report column.
22. In cell M1, type the column heading "Store Week".
23. Enter a CONCATENATE function into cell M2 that combines the Store and Week columns. Define the "text1" argument with cell B2, and the "[text2]" argument with cell J2.
24. Copy cell M2 and paste it into all of the rows in the dataset by double clicking the Fill Handle.
25. In cell N1, type the column heading "Weekly Store Sales".
26. Enter an IF function in cell N2 that displays the first instance of the values in the Store Report column. The logical test of the IF function should evaluate if cell M2 is equal to M1. If the logical test is true, the output of the function should be 0. If the logical test is false, the output of the function should be the value in cell H2.
27. Copy cell N2 and paste it into all of the rows in the dataset by double clicking the Fill Handle.
28. In cell O1, type the column heading "SKU Check".
29. Enter a VLOOKUP function into cell O2 that looks for the SKU (Stock Keeping Unit) number in cell G2 in the SKU List worksheet. Define the "lookup_value" argument with cell G2. Define the "table_array" argument with the range A2:A101 in the SKU List worksheet. Place an absolute reference on this cell range before defining the next argument. Define the "col_index_num" argument with the number 1 and the "[range_lookup]" argument with the word "FALSE" to look for an exact match to the lookup value.
30. Copy cell O2 and paste it into all of the rows in the dataset by double clicking the Fill Handle.
31. In cell P1, type the column heading "SKU Alert".
32. Enter an IF function in cell P2 that shows an output of 1 if the VLOOKUP function produced an error output in the SKU Check column. The logical test of the IF function should be defined with the ISERROR function. Define the "value" argument of the ISERROR function with cell O2. If the logical test is true, the output of the IF function should be the number 1. If the logical test is false, the output of the function should be 0.
33. Copy cell P2 and paste it into all of the rows in the dataset by double clicking the Fill Handle.
34. Create a PivotTable using the entire dataset in the Inv Transactions worksheet. Click cell A1 and click the PivotTable button in the Insert tab of the Ribbon. The Create PivotTable dialog box should automatically include the entire range of the dataset. The PivotTable should appear in a separate worksheet and the worksheet tab label should be changed to "Returns Ratio".
35. Add the Region and Store fields to the ROWS area of the PivotTable.
36. Change the layout of the PivotTable to the Outline Form by clicking the Report Layout button in the Design tab of the Ribbon.
37. Add the Transaction Number field to the VALUES area of the PivotTable.
38. Double click the Sum of Transaction Number column heading on the PivotTable to open the Value Field Settings dialog box. Change the output calculation to Count and the field name to "Transaction Count".
39. Add the Sale Amount field to the VALUES area of the PivotTable. Change the field name to "Cash Sales" and format the values to U.S. currency with zero decimal places.
40. Add the Return Amount field to the VALUES area of the PivotTable. Change the field name to "Cash Returns" and format the values to U.S. currency with zero decimal places.
41. Add a calculated field by clicking the Fields, Items, & Sets button in the PivotTable Analyze tab of the Ribbon. The field name should be Returns Ratio. The formula should be the Return Amount field divided by the Sale Amount field.
42. Format the values in the Sum of Returns Ratio field to a percentage with two decimal places.
43. Sort the stores on the PivotTable based on the values in the Sum of Returns Ratio field in descending order. The results of this PivotTable show stores that have a high percentage of returns with respect to sale transactions. These stores may require additional monitoring to ensure these are all legitimate returns.
44. Create a second PivotTable using the entire dataset in the Inv Transactions worksheet. The worksheet tab name should be "SKU ALERT".

45. Add the SKU Alert Field to the ROWS area of the PivotTable.
46. Change the layout of the PivotTable to the Tabular Form.
47. Click the down arrow next to the SKU Alert field name on the PivotTable and set a filter so only the value of 1 is displayed.
48. Add the District, Store, and SKU fields to the ROWS area of the PivotTable.
49. Add the Date and Time fields to the ROWS area of the PivotTable.
50. Remove all subtotals from the PivotTable, and increase the column width of the Date and SKU fields if needed.
51. Click the Time column heading on the PivotTable. Show all values in this field by clicking the Ungroup button in the PivotTable Analyze tab of the Ribbon.
52. Add the Amount field to the VALUES area of the PivotTable. The PivotTable shows that store 310 in district 30SE processed returns for SKU 82023138, which is an item that is not sold by the company. The pattern of these returns is interesting as they all occurred at or after 7:00 p.m., which may be right before the store closes or times when there are fewer people in the store. Also, notice that the same item was returned for different purchase amounts. In total, $282.96 was taken from the cash register for these returns.
53. Save and close your workbook.

Chapter Skills Test

Starter File Name: Chapter 8 Skills Test

Digital Downloads

Chapter 8 Skills Test.xlsx
https://catalog.flatworldknowledge.com/a/34751/Chapter_8_Skills_Test-541a.xlsx

Difficulty: Level 3

Answer the following questions by executing the required skills on the starter file listed above. Answer each question in the order it appears. Questions that are preceded with the letters **KO** indicate you must only use your keyboard and not your mouse to execute the required skill.

1. **KO** Open the READ ME worksheet.
2. **KO** Change the width of columns A and B to 20 points.
3. **KO** Format the data in cells A1:A4 to Bold and Italics.
4. **KO** Change the font style for the entire worksheet to Arial and the font size to 12 points.
5. **KO** Edit each entry in cells A1:A4 by adding a colon at the very end of the text.
6. **KO** Apply the Merge Across format on the range B4:F4.
7. **KO** Set the alignment in the merged cell beginning with B4 to Align Left.
8. **KO** Format the merged cell beginning with B4 to wrap text.
9. **KO** Add the current date in cell B1.
10. **KO** Add the current time in cell B2.
11. **KO** Type your last name in cell B3.
12. **KO** Increase the height of row 4 to 35 points.
13. **KO** Type the following into the merged cell beginning with B4: "Do not change sort sequence in Store Data worksheet.". Start a new line in this cell, and add the following so that it appears below the text you just typed: "Read any alerts before using this workbook!".
14. Create a PivotTable that shows each unique store from the Store Data worksheet. Your PivotTable should appear in a separate worksheet, and the worksheet tab should be named Stores.
15. Create a second PivotTable that shows the date range from the Store Data worksheet. Your PivotTable should appear in a separate worksheet, and the worksheet tab should be named