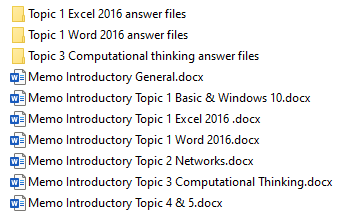
**MEMO: TOPIC 3**

**DATA, INFORMATION MANAGEMENT AND COMPUTATIONAL THINKING**



**To the lecturer:**

This topic should be integrated with Topic 1.13, Spreadsheet basics, to show how spreadsheets could be used to solve everyday problems. Refer to spreadsheet activities completed in the spreadsheets section.

Apply computational thinking techniques when creating spreadsheets in this section:

decomposition, patterns, abstraction, and algorithms.

Ask questions, such as: What is the problem to be solved?

Why would it be good to use a spreadsheet to solve the problem?

What steps, algorithms, will be followed?

Why presented in this way?

Did you really solve the problem?

Most important is the concepts of **Decomposition**, **Pattern Recognition**, **Abstraction** and **Algorithms**. The explanations do not need to be very technical.

**Unplugged activities** can be used in the classroom to demonstrate these concepts, depending on the particular group of students.

**What are unplugged activities?**

"The objective of unplugged activities is mainly to teach programming concepts through the use of games ora ctivities that can be done offline using tangible objects, such as paper and markers. Therefore, it is valuable to develop Computational Thinking Skills without the use of technology".

Add unplugged activitiesto improve computational thinking skills, visit the following websites for ideas and apply what you think will be applicable for your student group:

http://info.thinkfun.com/stem-education/6-unplugged-coding-activitiesfor-hour-of-code

https://teachinglondoncomputing.org/free-workshops/programmingunplugged-programming-without-computers/

https://www.bebras.org/

https://code.org/curriculum/unplugged

https://en.wikipedia.org/wiki/Code.org

Spreadsheets is an important tool for computational thinking: taking a problem and breaking it down into smaller parts, for example in Tourism to compile a tour. Use the example in the textbook, or students can use their own ideas. They can arrange a tour in South Africa to places known to them.

**Examples of Activities:**

• Create a brochure that will advertise various holidays to potential customers.

• Present the sales data of a company in a meaningful way.

• Prepare quotations for 3 laptops and do a comparison according to specifications and price.

• Add an integrated **Excel/Word/PowerPoint activity** to force students to think how they need to solve the problem. For example, plan an event: they must present 3 options to the client which must include a budget (Excel), invitations (Word), marketing (PowerPoint). Let the students draw a diagram to indicate the flow of events that lead to the end result (algorithmic thinking, flow chart), or write a step-by-step planning document for the event (with timelines).

• Let’s say a student is appointed as a PA to a manager for a travel agency and he/she must assist the manager to compile two new tours for their catalogue.

• The student must gather data of possible flights from different airlines.

• Select the best flights based on criteria.

• Sort the flights according to the dates and times.

• Create a simple chart to explain to the customers how to book a holiday package.

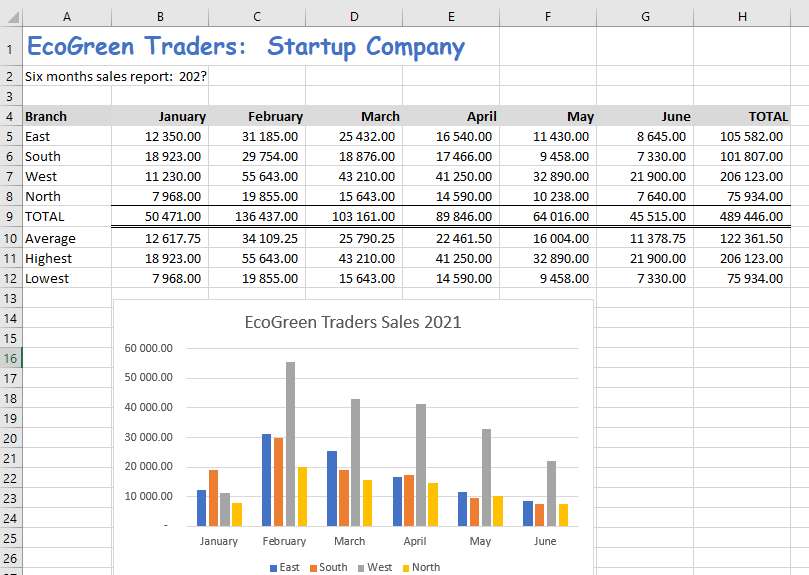
**Activity 3.1**

**Computational thinking in Excel**

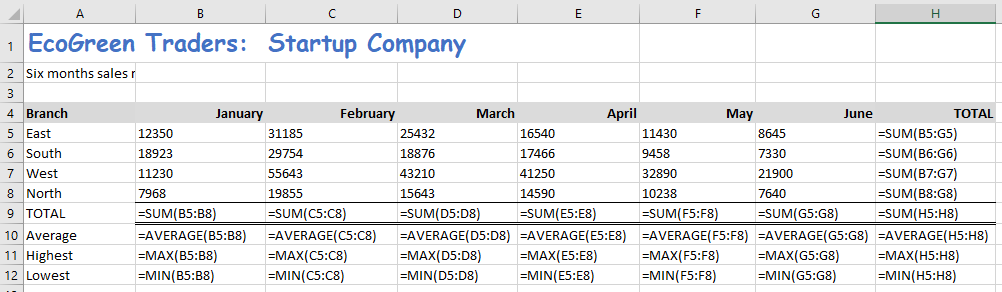
**TO THE LECTURER**

The practical answer files are in the Topic 3 Computational answer files folder.

**EcoGreen.xlsx**



**Formulas**

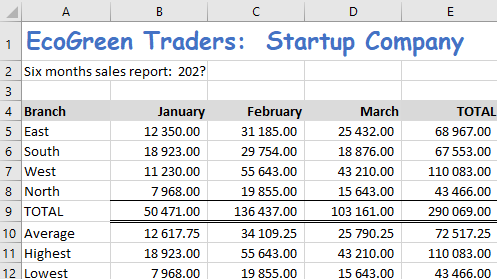


**Activity 3.2**

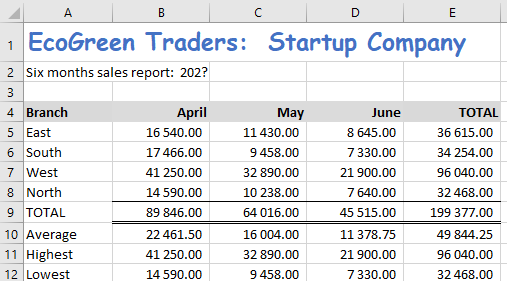
**Computational thinking in Excel**

**EcoGreen Traders sales.xlsx**

**Sales January to March 202?**



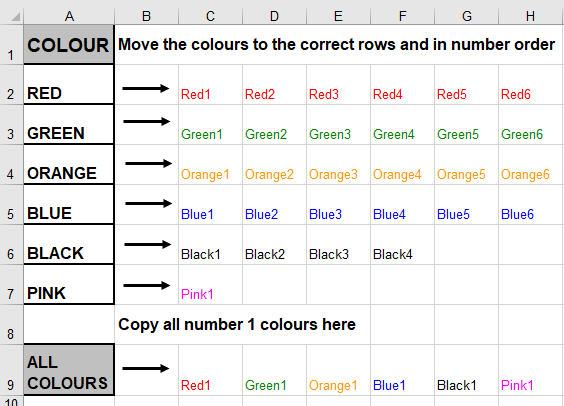
**Sales April-May 202?**



**Activity 3.3**

**Computational thinking in Excel**

**Colours Answer.xlsx**



**Newcolours.xlsx** looks exactly as this one, but is copied to a new file name.

**TO THE LECTURER**

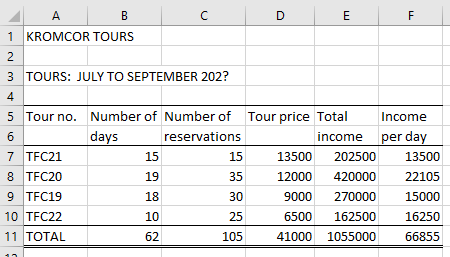
To copy this file with all the formatting, colours and column widths: select the **rows** and copy to the new worksheet.

**Activity 3.4**

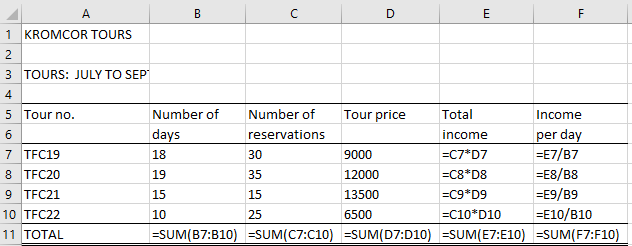
**Conditional thinking in Excel**

**Tour1.xlsx**

Sorted on Total income.



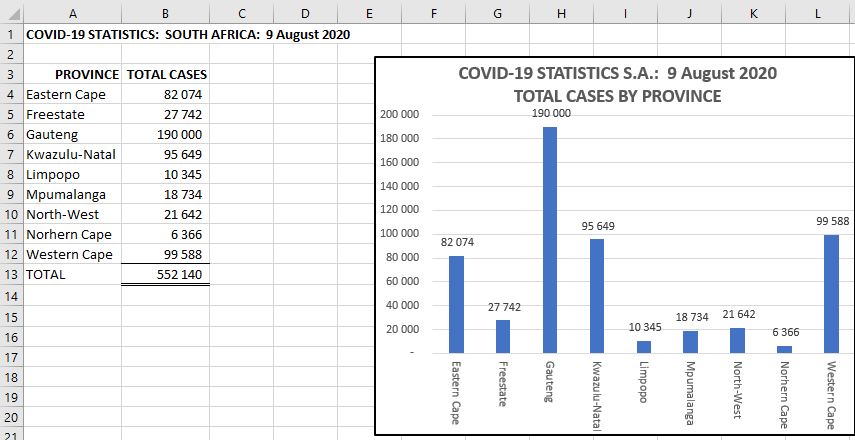
**Formulas**



**Activity 3.5**

**Conditional thinking in Excel**

**Covid19 Stats Aug2020.xlsx**



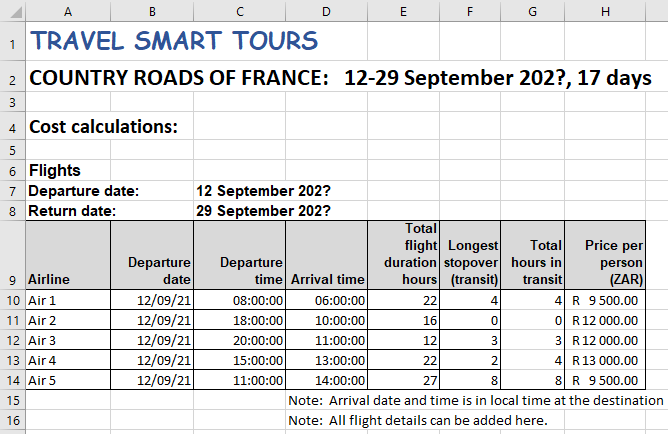
1. Discuss what you understand this graph is showing. Write down a list of what you understand.

**Practical 3.1.19**

**TO THE LECTURER**

The practical file, **Topic 3 Travel Smart France.xlsx** answer is provided in the **Topic 3 Computational answer files** folder.

The student can do his own tour in South Africa; they can choose what they want to do. A flight or two should be included in his tour program.



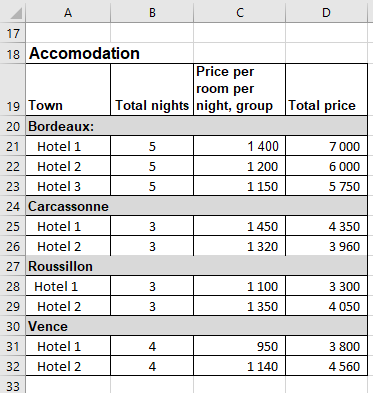
**PRACTICAL**

Students can search on the Internet about the places to be visited, and compile a brochure in Microsoft Word

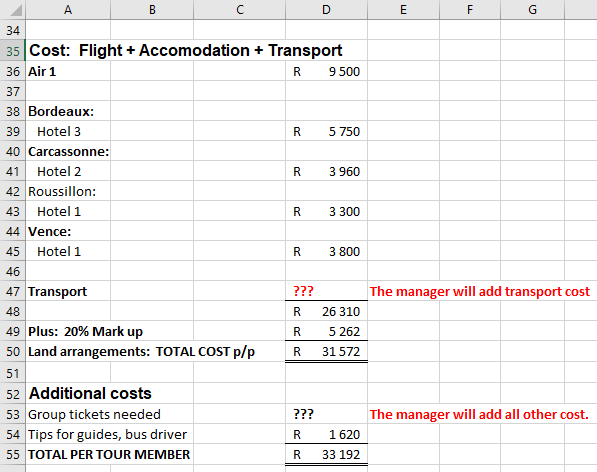
**PRACTICAL**

Create these spreadsheets on one worksheet; rename the sheet to France.

Advanced spreadsheets can be created on separate sheets with one summary sheet to calculate the results.



Enter formulas to calculate the Total price; **do not type in the answers**.



**Formulas**

**TO THE LECTURER**

In N4 and N5 Computer Practice, the IF formula and absolute cell addresses can be used to choose flights and hotels according to criteria, such as **Total flight duration hours** or **Price per person**.

