

EBUS3030  
ASSESSMENT 2  
Group Project Part B

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**TUTORIAL DETAILS:**

Friday 1pm  
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# Executive Summary

In response to the evolving challenges and opportunities facing 'BitsAndBobs' Australia, this executive summary outlines key findings and recommendations based on a comprehensive analysis of the company's operations.

As instructed by the CEO of BitsAndBobs, this report points out who were the best salespersons across three categories - \$'s earned, total transactions made, total quantity sold. Furthermore, this report breaks down this data into each month and each store.

Moreover, the top three most popular items, therefore best performing items, identified were mitre saw with 20811 units, Drill Bit 5mm with 20598 units, and Drill Bit 3mm with 20568 units sold. On the other hand, the top three least popular items, therefore worst performing items were Drill Bit 6mm with 19481 units, Ruler with 19613 units and the screwdriver set with 19741 units sold.

The sales performance of the ten branches across Australia reveals a concerning trend of declining sales in certain product categories, necessitating a potential office consolidation strategy for cost-saving. This report identifies Wollongong store as the worst performing store out of all the 10 existing stores of BitsAndBobs and recommends that it should be closed. This recommendation is also based on the predictive analytics explained in detail in the report.

Furthermore, the current 12.5% discount model has been identified as a source of significant financial loss, prompting the consideration of replacing it with a points-based marketing promotion. With the discount model in place, BitsAndBobs gave away \$1,172 928.16. That is a huge amount considering that BitsAndBobs is running at a loss. Also, the point based system would have instead costed BitsAndBobs \$48,030 of credited dollars over the 12 month period.

This report also provides projected trends for the coming year and the identification of top and bottom selling products in each branch offer valuable insights for future planning. The aim of this analysis is to assist in shaping the future direction of 'BitsAndBobs' Australia, ensuring long-term profitability and success. For a detailed report, please refer to the below sections.

# Introduction

The following report prepared by BI Solver addresses immediate and future needs for BitsAndBobs and its 10 distinct branches. Our consultancy aims to provide solutions to Bill Smotherington's queries regarding best sales person for each store and overall, best and worst performing items for each store and overall, the worst performing store and an overview of the new point system. To ensure that all requests are met, a database for data storage is provide that extracts, transforms and loads imported data. We also aim to provide base and predictive analysis that will assist in current and future decision making for the business. Lastly BI Solver will provide recommendations for the proposed queries with further ideas and concepts for Bill's interpretation.

# Methodology

## Extraction

In the extraction stage, data is extracted from a source or sources and converted into a format that can be loaded into a target system. Refactoring your new BitsAndBob's stores Excel tabular data to an SQL format was needed to prepare the data transfer into an organizational data mart. Microsoft's SQL Studio 18 was chosen as an effective tool for this transformation. Microsoft's SQL Studio 18 can convert Excel tables into an SQL format, allowing seamless data integration into an SQL database. It is important to acknowledge that some systems were not capable of running the excel file as it is a much larger dataset. Updated drivers were necessary for importing the data which BitsAndBobs may require prior to operating our new database.

## Transformation

The data transformation stage entails data cleaning and data formatting. Our data cleaning was initially performed to simplify further querying of extracted data. This cleaning entails converting variables into suitable data formats, ensuring data consistency, removing any redundancies and general error handling.

## Cleaning

We can break the cleaning process up into 4 categories, data formatting, data consistency, redundancy and general error handling:

### Data formatting

To increase efficiency within the system, it is appropriate to apply the correct data type the database requires. For example, using (int) for a staff office doesn't make sense since staff office only goes up to 10. In this circumstance its much more appropriate to use (smallint). However, for something like (Receipt ID) which is ever increasing, its more appropriate to use (int). Another example to look at is (Item Price) and (Row Total). Storing these data types are (smallmoney) assists the system in recognising what its worth.

Importantly, with the reintroduction of staff office and office location attributes, it was important we revisit this and ensure correct data formatting to those attributes.

### Data consistency

Ensuring that naming standards are kept is crucial with maintaining a system as incorrect naming practices can confuse and complicate data analysis and querying. This can include things like incorrect spelling, capitalization, spacing, use of null values such as symbols, and thoughtless names. Although not

major, the incorrect spelling of receipt in (Receipt Transaction Row ID) was fixed within excel prior to data importing.

## Redundancy

Removing redundancy is essential for efficiency and accuracy within a system. Duplicate data and skew results which is not ideal for identifying trends and patterns. Unlike the first data set provided by BitsAndBobs, there were less redundancies, but still wasn't perfect. It was found in two instances that (Receipt ID)'s were duplicated and attached to two different transactions (Receipt ID's were 104312 and 118551). This was removed by counting the total number of receipts and adding 1 to the last receipt within the count.

It was also identified that staff member Isabella Green worked between Wagga Wagga and Brisbane. Initially this was believed to be an error as geographically these two stores are not close to each-other and not accessible to work both locations, however if this assumption were to be wrong that Isabella's hard work would not be recognised. It was agreed that Isabella working two stores could be a possibility thus made no change to the transactions she made.

## General error handling

Provided below is a list of general error checking to ensure that the data is correct and that potential redundancies can be identified:

- Checking for duplicate items
- Check for duplicate item descriptions
- Check that all item id's and descriptions match
- Check that all stores have same item offerings
- Check duplicate staff id's

Refer to Appendix A for respective executed SQL statements

## Data modeling

Data modeling is designed to simplify data structure, make it easier to write and understand queries and optimize fast aggregation of large amounts of data. It consists of facts and dimensions derived from the dataset provided by BitsAndBobs to organize, reduce redundancy and increase readability. The data model is created by separating data into facts and dimensions. In practice, that means separating quantitative measures from qualitative information. In order to simplify querying over specific months and years we've added fields for month and year in the date dimension. The effect is that queries for statistics over specific time-frames will be faster. We have also created a separate data storage for each store allowing additions or subtractions of stores for the future. You will also notice that the Loyalty

attribute has been removed, this is strategic as BitsAndBobs now considers all registered customers for their new discount system and keeping Loyalty will just be redundant data. The data model derived is as follows:

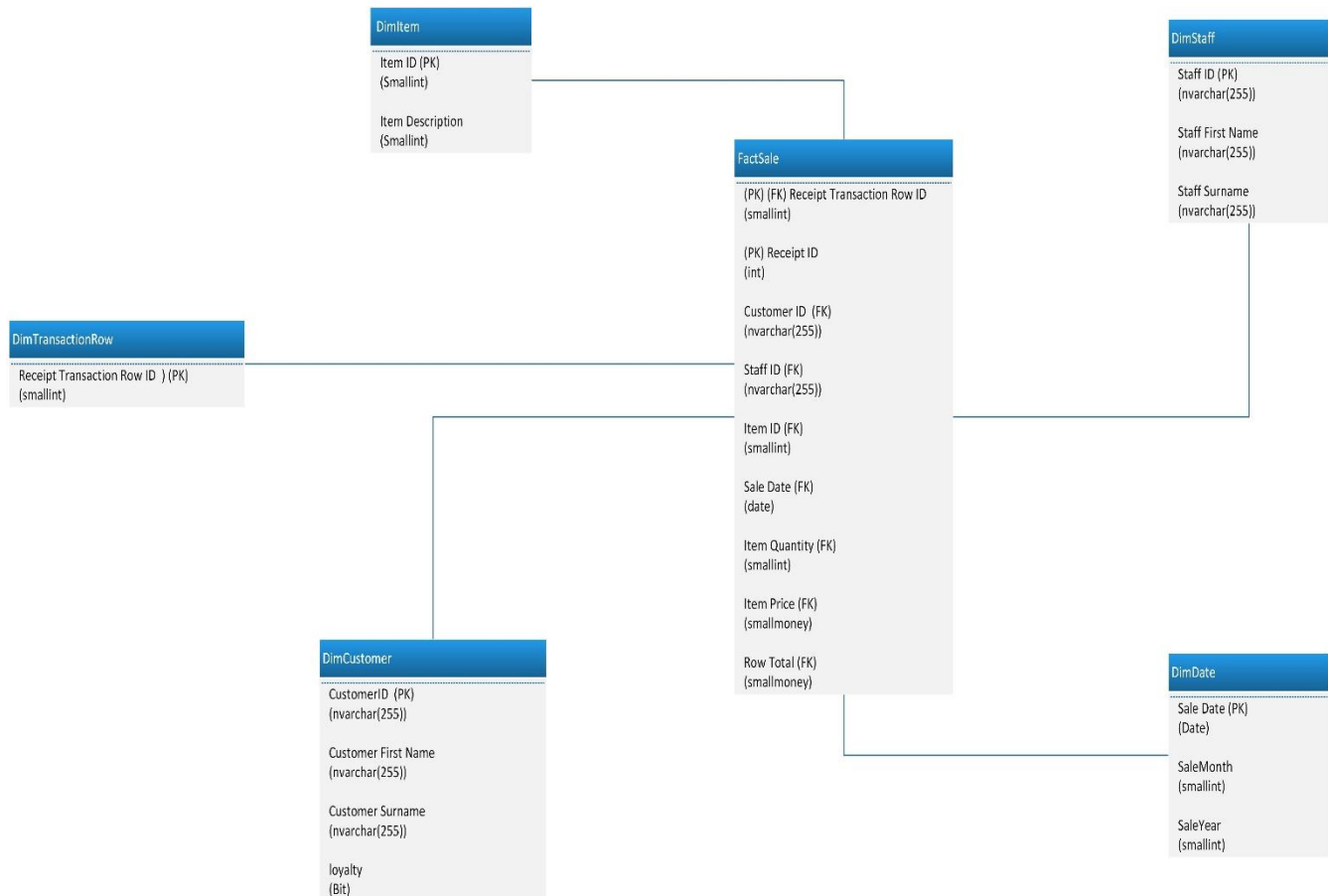


Figure 1: Use case diagram of BitsAndBob.

The data model was executed by creating tables for each table in the data mart model within SQL. This means separating Customers, Staff, Items, dates, receipt information and stores into individual tables. Please refer to Appendix B for SQL statements used to create the facts and dimensions of the data mart.

## Benefits and limitations

The data model created for BitsAndBobs is an effective means for portraying specific aspects of the organization. Provided below is list of beneficiaries for BitsAndBob's new database:

- The simplicity of the star schema allows users to identify the central fact table (FactTable) and all its accompanying dimension tables.



- Effective query performance through the fact table that holds all information required for finding best salesperson, best and worst performing store, and best and worst performing items. Having all the information within an optimized table enables faster querying.
- View of sales transactions as a whole provided by the fact table which makes it simpler to track, assess, contrast sales transactions for individual stores or all the stores. This allows for trend analysis, finding patterns, and possible insights relating to performance of top salesperson, best and worst performing stores, and best and worst performing items through a unified perspective.
- The reduction of data redundancy by the removal of the loyalty attribute as BitsAndBobs now considers all customers as registered. There is no reason to add the loyalty attribute back to the dataset.
- Further exploration of trends and patterns through individual dimension tables.

Contrary to the benefits, there are still some limitation and constraints to the system:

- Increasing data volume and performance can become an issue over time with a constant stream of data each day will build up over the years. Over 100 000 rows of data were totalled over just 1 year across the 10 stores. Increasing stores and sales will decrease performance due to the excessive data overload.
- Limitation for advanced analytics such as machine learning or predictive analysis. Without consideration of external factors such as season, holiday, geographic location etc, this makes it extremely biased basing it only off the dataset.
- Schema changes that are rigid could be difficult to adjust the current star schema without disrupting current data or analytical processes if business requirements change considerably. Data migration techniques and careful preparation may be needed to implement schema modifications.
- Small-scale historical analysis using the star schema only records recent data, which makes it difficult to undertake historical analysis of prior sales trends and patterns. This limitation may make it more difficult to spot long-term patterns in salesperson, store and item effectiveness and shifts in consumer behavior.

## Loading

The loading stage refers to transferring cleaned data into the created data mart. This was done by inserting specific columns from the cleaned data into a corresponding table. For specific executed SQL statements, refer to Appendix C.

# Core Analysis

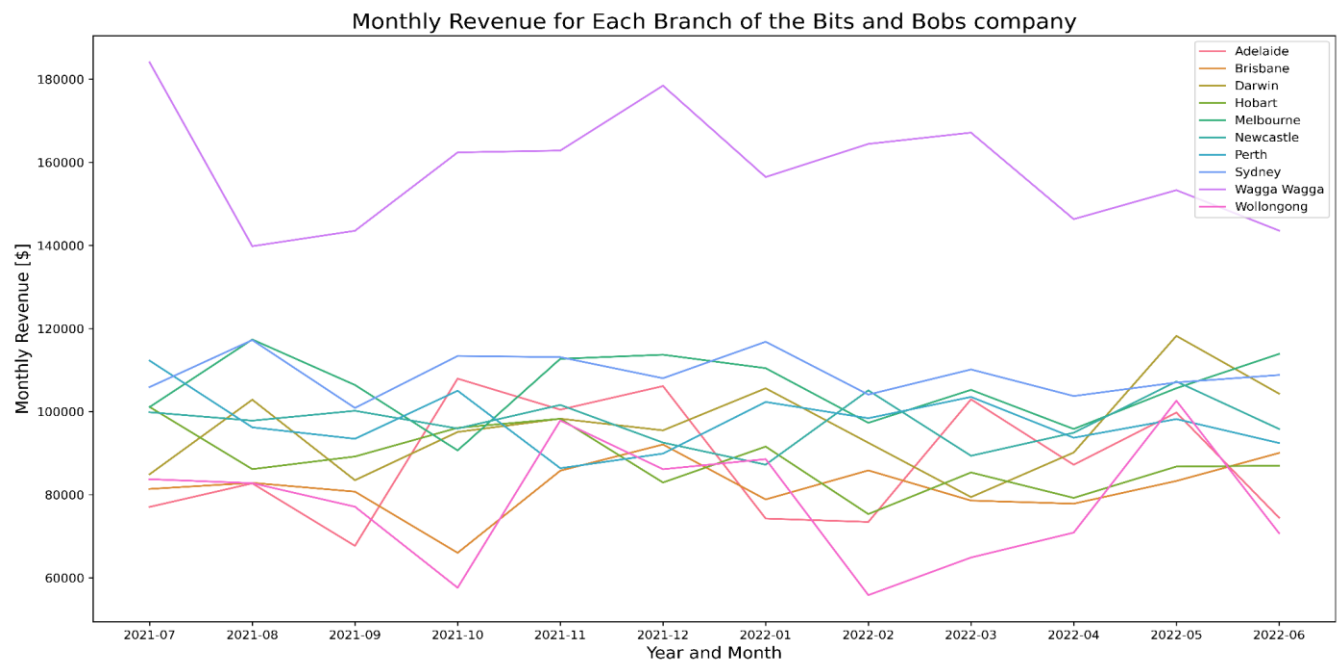


Figure 2: Aggregated monthly sales per branch

Figure 2, shows the monthly sales of each Bits and Bobs branch in the last fiscal year.

## Top Salesperson

As instructed by the CEO of BitsAndBobs, we identified top salesperson in three different categories - \$'s earned, total transactions made, and most goods sold. As the CEO wanted, we found out the top salesperson in each category for each month and for the whole year. To not overwhelm the CEO with so much data, we decided to break the data down into the most important data a CEO would need (presented during the presentation) and give him the option to look over at more detailed metrics in this report. For instance, we found out the top salesperson for each of the categories for each month and for each store, that output was 124 data points. We broke it down and presented the top salesperson for each month across all the stores to give a valuable overview to the CEO. This part of the report will go through the description and evidence of how top salesperson were identified in each of the three categories using SQL scripts.

## Top salesperson for each month out of all offices in dollars earned.

To get only the top salesperson for each month, we use the ROW\_NUMBER() window function to assign a rank to each salesperson for each month based on their total sales and then filter out only the top salespersons for each month.

The script first calculates the total monthly sales for each salesperson in the MonthlySales common table expression (CTE) and assigns a rank to each salesperson for each month using the ROW\_NUMBER() window function. The main SELECT statement then filters out only the top salesperson (i.e., rank = 1) for each month.

```
/*Top salesperson for each month out of all offices in $ earned*/
WITH MonthlySales AS
(
    SELECT
        YEAR([Sale Date]) AS Year,
        MONTH([Sale Date]) AS Month,
        [Office Location],
        [Staff ID],
        [Staff First Name] + ' ' + [Staff Surname] AS SalespersonName,
        SUM([Row Total]) AS MonthlyTotalSales,
        ROW_NUMBER() OVER (PARTITION BY YEAR([Sale Date]), MONTH([Sale Date])
                           ORDER BY SUM([Row Total]) DESC) AS Rank
    FROM
        [EBUS3030_assignment_2].[dbo].[Assignment 2 Data$]
    GROUP BY
        YEAR([Sale Date]),
        MONTH([Sale Date]),
        [Office Location],
        [Staff ID],
        [Staff First Name] + ' ' + [Staff Surname]
)

SELECT
    Year,
    Month,
    [Staff ID],
    [Office Location],
    SalespersonName,
    MonthlyTotalSales
FROM
    MonthlySales
WHERE
    Rank = 1
ORDER BY
    Year,
    Month;
```

Raw output of SQL Script:

Top salesperson for each month out of all offices in \$ earned					
Year	Month	Staff ID	Office Location	SalespersonName	MonthlyTotalSales
2021	July	S41	Wollongong	Victoria Cotton	12745.9
	August	S119	Melbourne	Carlos King	10774.8
	September	S132	Hobart	Eli Powell	11516.6
	October	S153	Adelaide	Joey Clark	13020.05
	November	S58	Hobart	Samantha Fisher	13226.8
	December	S104	Wagga Wagga	Jake Cox	11497
2022	January	S189	Hobart	Taylor Morales	13024.5
	February	S79	Sydney	Caleb Nguyen	11479.9
	March	S106	Wagga Wagga	Mia Foster	12663.9
	April	S68	Adelaide	Isaiah Cruz	13378
	May	S68	Adelaide	Isaiah Cruz	12383.65
	June	S165	Sydney	Marcus Ross	11785.1

## Top salesperson for each month at each office in dollars earned.

To get the top salesperson for each month at each office location, we simply add the [Office Location] to our partition in the ROW\_NUMBER() function and group by it as well. By partitioning the ROW\_NUMBER() by the [Office Location], will give you the top salesperson for each month in each office location.

```
WITH MonthlySales AS
(
    SELECT
        YEAR([Sale Date]) AS Year,
        MONTH([Sale Date]) AS Month,
        [Office Location],
        [Staff ID],
        [Staff First Name] + ' ' + [Staff Surname] AS SalespersonName,
        SUM([Row Total]) AS MonthlyTotalSales,
        ROW_NUMBER() OVER (PARTITION BY YEAR([Sale Date]), MONTH([Sale Date]), [Office
Location]
                            ORDER BY SUM([Row Total]) DESC) AS Rank
    FROM
        [EBUS3030_assignment_2].[dbo].[Assignment 2 Data$]
    GROUP BY
        YEAR([Sale Date]),
        MONTH([Sale Date]),
        [Office Location],
        [Staff ID],
        [Staff First Name] + ' ' + [Staff Surname]
)
```

```

SELECT
    Year,
    Month,
    [Office Location],
    [Staff ID],
    SalespersonName,
    MonthlyTotalSales
FROM
    MonthlySales
WHERE
    Rank = 1
ORDER BY
    Year,
    Month,
    [Office Location];

```

Raw output of SQL Script:

Top salesperson for each month at each office in dollars earned.					
Year	Month	Office Location	Staff ID	SalespersonName	MonthlyTotalSales
2021	7	Adelaide	S156	Heather Nguyen	8004
2021	7	Brisbane	S89	Rebecca Kelly	8452.2
2021	7	Darwin	S91	Mike Rodriguez	9479.8
2021	7	Hobart	S45	Emma Gutierrez	9812.75
2021	7	Melbourne	S119	Carlos King	8473.85
2021	7	Newcastle	S17	Daniel Baker	9015.75
2021	7	Perth	S114	Erin Rivera	8952.25
2021	7	Sydney	S72	David Gonzalez	9910.5
2021	7	Wagga Wagga	S123	Jade Rodriguez	10480.85
2021	7	Wollongong	S41	Victoria Cotton	12745.9
2021	8	Adelaide	S138	Jade Kelly	10075
2021	8	Brisbane	S95	Kaitlyn Scott	7685.7
2021	8	Darwin	S101	Jenna Cox	9799.45
2021	8	Hobart	S85	Jose Diaz	8892.85
2021	8	Melbourne	S119	Carlos King	10774.8
2021	8	Newcastle	S5	Stephanie Watson	10653.85
2021	8	Perth	S90	Jack Bailey	8691.4
2021	8	Sydney	S165	Marcus Ross	10357.45
2021	8	Wagga Wagga	S108	Isaiah Powell	7884
2021	8	Wollongong	S29	Sam Scott	8637.55
2021	9	Adelaide	S162	Tristan Smith	8205.75
2021	9	Brisbane	S154	Zoe Barnes	10432.1
2021	9	Darwin	S75	Robert Evans	8000.9
2021	9	Hobart	S132	Eli Powell	11516.6
2021	9	Melbourne	S113	Emma Gray	7338.95
2021	9	Newcastle	S7	Molly Jackson	8143.25

2021	9	Perth	S97	Caitlin Ross	7943.85
2021	9	Sydney	S117	Catherine Moore	8901.4
2021	9	Wagga Wagga	S186	Jake Wilson	9520.6
2021	9	Wollongong	S187	Savannah Jones	11237.55
2021	10	Adelaide	S153	Joey Clark	13020.05
2021	10	Brisbane	S157	Isabella Green	12425.5
2021	10	Darwin	S173	Jordan Brown	10843.1
2021	10	Hobart	S132	Eli Powell	10124.1
2021	10	Melbourne	S109	Nicole Hernandez	6946.85
2021	10	Newcastle	S14	Noah Cotton	12412.1
2021	10	Perth	S140	Alexandra Carter	9593.85
2021	10	Sydney	S137	Jessica PDenningips	11714.95
2021	10	Wagga Wagga	S106	Mia Foster	9964.5
2021	10	Wollongong	S34	Kelly Reed	7218.35
2021	11	Adelaide	S153	Joey Clark	11349.5
2021	11	Brisbane	S154	Zoe Barnes	10493.75
2021	11	Darwin	S188	Sam Cotton	8169.7
2021	11	Hobart	S58	Samantha Fisher	13226.8
2021	11	Melbourne	S145	Rachel Gonzalez	10298.3
2021	11	Newcastle	S18	Megan James	9351.3
2021	11	Perth	S140	Alexandra Carter	6598.9
2021	11	Sydney	S178	Kaitlyn Nguyen	9489.3
2021	11	Wagga Wagga	S36	Andrew Cotton	10595.2
2021	11	Wollongong	S139	Ryan Holliday	10094.45
2021	12	Adelaide	S88	Nicole Rodriguez	9884.1
2021	12	Brisbane	S107	Marissa Summers	10346.65
2021	12	Darwin	S75	Robert Evans	9048.2
2021	12	Hobart	S58	Samantha Fisher	7915.1
2021	12	Melbourne	S93	Nate Bennett	8962.05
2021	12	Newcastle	S14	Noah Cotton	10555.95
2021	12	Perth	S49	Robert Gonzalez	10500
2021	12	Sydney	S137	Jessica PDenningips	9965.7
2021	12	Wagga Wagga	S104	Jake Cox	11497
2021	12	Wollongong	S163	Maddie Adams	8097.25
2022	1	Adelaide	S71	Danielle Myers	9966.7
2022	1	Brisbane	S157	Isabella Green	8818.75
2022	1	Darwin	S52	Isabella Rivera	9505.8
2022	1	Hobart	S189	Taylor Morales	13024.5
2022	1	Melbourne	S109	Nicole Hernandez	11906.8
2022	1	Newcastle	S3	Amber Denning	10725
2022	1	Perth	S54	Joshua Long	8801.8
2022	1	Sydney	S117	Catherine Moore	9686.85
2022	1	Wagga Wagga	S62	Kaitlyn Anderson	9047.6

2022	1	Wollongong	S94	Shane Smith	9731.35
2022	2	Adelaide	S129	Jennifer Smith	9240.2
2022	2	Brisbane	S95	Kaitlyn Scott	11292.95
2022	2	Darwin	S199	Maria Smith	8500.4
2022	2	Hobart	S131	Ethan Edwards	7306.85
2022	2	Melbourne	S185	Chase Carter	7850.7
2022	2	Newcastle	S4	Robert Timson	9546.15
2022	2	Perth	S114	Erin Rivera	7980.65
2022	2	Sydney	S79	Caleb Nguyen	11479.9
2022	2	Wagga Wagga	S111	William Jamison	11391.65
2022	2	Wollongong	S170	Courtney Holliday	7079.4
2022	3	Adelaide	S122	Austin Morris	10353.9
2022	3	Brisbane	S35	Adam Diaz	8465.55
2022	3	Darwin	S31	Claire Jones	7544.4
2022	3	Hobart	S193	Savannah Garcia	9171.4
2022	3	Melbourne	S151	Cole Rodriguez	9205.15
2022	3	Newcastle	S2	Joseph Reed	8297.5
2022	3	Perth	S78	Sophie Richardson	11303.6
2022	3	Sydney	S56	Anna Kelly	10469.75
2022	3	Wagga Wagga	S106	Mia Foster	12663.9
2022	3	Wollongong	S27	Maria Andora	8220.85
2022	4	Adelaide	S68	Isaiah Cruz	13378
2022	4	Brisbane	S60	Nick Collins	8508.35
2022	4	Darwin	S101	Jenna Cox	8132.5
2022	4	Hobart	S45	Emma Gutierrez	7208.35
2022	4	Melbourne	S109	Nicole Hernandez	8883.3
2022	4	Newcastle	S7	Molly Jackson	9273.2
2022	4	Perth	S114	Erin Rivera	9402.3
2022	4	Sydney	S99	Vanessa King	11153.45
2022	4	Wagga Wagga	S87	Zack Cruz	8410.45
2022	4	Wollongong	S65	Cole Thomas	8533
2022	5	Adelaide	S68	Isaiah Cruz	12383.65
2022	5	Brisbane	S35	Adam Diaz	10454.95
2022	5	Darwin	S110	Zach Bell	11749.95
2022	5	Hobart	S181	Gabriel Price	8941.15
2022	5	Melbourne	S67	Carlos Brown	8379.4
2022	5	Newcastle	S1	Lauren Martin	11072.25
2022	5	Perth	S135	Lexi James	10081
2022	5	Sydney	S44	Lexi Green	8467.9
2022	5	Wagga Wagga	S106	Mia Foster	10553.75
2022	5	Wollongong	S29	Sam Scott	12148.7
2022	6	Adelaide	S156	Heather Nguyen	8510.25
2022	6	Brisbane	S82	Tristan Long	11563.6

2022	6	Darwin	S188	Sam Cotton	10982.25
2022	6	Hobart	S58	Samantha Fisher	10832.65
2022	6	Melbourne	S145	Rachel Gonzalez	9151.85
2022	6	Newcastle	S8	Michelle Miller	8452.95
2022	6	Perth	S190	Samuel Anderson	9075.35
2022	6	Sydney	S165	Marcus Ross	11785.1
2022	6	Wagga Wagga	S83	Heather King	10936.9
2022	6	Wollongong	S187	Savannah Jones	11555.45

## Overall top salesperson by \$ earned.

```

SELECT
    [Staff ID],
    [Staff First Name] + ' ' + [Staff Surname] AS SalespersonName,
    [Office Location],
    SUM([Row Total]) AS TotalSales
FROM
    [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY
    [Staff ID],
    [Staff First Name],
    [Staff Surname],
    [Office Location]
ORDER BY
    TotalSales DESC;

```

Overall top salesperson by \$ earned.			
Staff ID	SalespersonName	Office Location	TotalSales
S187	Savannah Jones	Wollongong	81213.15
S45	Emma Gutierrez	Hobart	79066.95
S178	Kaitlyn Nguyen	Sydney	76289.95
S122	Austin Morris	Adelaide	75593.9
S71	Danielle Myers	Adelaide	75260.1
S193	Savannah Garcia	Hobart	73877.9
S106	Mia Foster	Wagga Wagga	73567.9
S190	Samuel Anderson	Perth	73311.7
S101	Jenna Cox	Darwin	73256.55
S104	Jake Cox	Wagga Wagga	72692.9
S44	Lexi Green	Sydney	72500.75
S68	Isaiah Cruz	Adelaide	72346.3



S129	Jennifer Smith	Adelaide	72334.7
S138	Jade Kelly	Adelaide	72013.25
S33	Alexis Wright	Wagga Wagga	71994
S196	Devin Brown	Adelaide	71883.55
S36	Andrew Cotton	Wagga Wagga	71574.6
S132	Eli Powell	Hobart	71559.25
S165	Marcus Ross	Sydney	71516.4
S156	Heather Nguyen	Adelaide	71276.15
S154	Zoe Barnes	Brisbane	70997.95
S186	Jake Wilson	Wagga Wagga	70605.95
S111	William Jamison	Wagga Wagga	70516.4
S58	Samantha Fisher	Hobart	70218.25
S173	Jordan Brown	Darwin	70157.2
S21	Megan Long	Wagga Wagga	70102.8
S48	James Kelly	Brisbane	69977.9
S5	Stephanie Watson	Newcastle	69975.45
S188	Sam Cotton	Darwin	69487.25
S91	Mike Rodriguez	Darwin	69061.45
S29	Sam Scott	Wollongong	69045.5
S113	Emma Gray	Melbourne	68400.6
S27	Maria Andora	Wollongong	67856.9
S108	Isaiah Powell	Wagga Wagga	67545.55
S56	Anna Kelly	Sydney	67523.7
S167	Bryan Walker	Darwin	67402.9
S142	Noah Thomas	Adelaide	67292.6
S40	Nick Perry	Hobart	67290
S179	Charles Roberts	Wagga Wagga	67222.1
S12	Leah Harris	Newcastle	67187
S157	Isabella Green	Brisbane	67104.3
S6	Evan Denning	Newcastle	66873.25
S62	Kaitlyn Anderson	Wagga Wagga	66759.5
S119	Carlos King	Melbourne	66623.45
S127	Sean Kelly	Wagga Wagga	66193.8
S14	Noah Cotton	Newcastle	66078.7
S83	Heather King	Wagga Wagga	65984.85
S153	Joey Clark	Adelaide	65807.95
S137	Jessica PDenningips	Sydney	65503.9
S102	Cameron Smith	Hobart	65489.85
S114	Erin Rivera	Perth	65217.7
S151	Cole Rodriguez	Melbourne	65067.45
S7	Molly Jackson	Newcastle	65000.35
S79	Caleb Nguyen	Sydney	64991.95

S34	Kelly Reed	Wollongong	64457
S170	Courtney Holliday	Wollongong	64418.15
S116	Adam Adams	Perth	64284.35
S139	Ryan Holliday	Wollongong	64268.35
S52	Isabella Rivera	Darwin	64235.5
S95	Kaitlyn Scott	Brisbane	64070.95
S143	Carlos Lewis	Sydney	64044.25
S169	Madison King	Adelaide	63987.65
S74	Brittany Turner	Sydney	63986.9
S60	Nick Collins	Brisbane	63916.85
S199	Maria Smith	Darwin	63816.9
S172	Stephen Roberts	Darwin	63789.65
S35	Adam Diaz	Brisbane	63685.1
S140	Alexandra Carter	Perth	63560.25
S155	Madison Cook	Adelaide	63396.2
S149	Eric Jones	Wollongong	63258.7
S136	Jasmine Rodriguez	Melbourne	63153.4
S200	Kyle Thomas	Darwin	62951.3
S54	Joshua Long	Perth	62807.55
S67	Carlos Brown	Melbourne	62697.55
S182	Maggie Jackson	Melbourne	62577.95
S85	Jose Diaz	Hobart	62544.05
S94	Shane Smith	Wollongong	62517.95
S195	Noah Bailey	Melbourne	62452.9
S50	David Anderson	Sydney	62381.2
S41	Victoria Cotton	Wollongong	62337.2
S31	Claire Jones	Darwin	61871.95
S1	Lauren Martin	Newcastle	61815.1
S81	Justin Johnson	Melbourne	61806.25
S152	Grace Walker	Wollongong	61798.05
S109	Nicole Hernandez	Melbourne	61771.6
S92	Joshua Gonzalez	Darwin	61769.45
S162	Tristan Smith	Adelaide	61713.6
S75	Robert Evans	Darwin	61281.25
S134	Joe King	Melbourne	61029.05
S78	Sophie Richardson	Perth	61022.25
S121	Michael Kelly	Sydney	60908.8
S10	Jonathan Jenkins	Newcastle	60490.05
S59	Jonathan Wilson	Wagga Wagga	60398.8
S15	Bailey Green	Newcastle	60342.9
S89	Rebecca Kelly	Brisbane	60178.75
S90	Jack Bailey	Perth	60171.4

S88	Nicole Rodriguez	Adelaide	59964.85
S2	Joseph Reed	Newcastle	59806.25
S150	Kyle Gutierrez	Perth	59607.15
S147	Vanessa Andora	Melbourne	59575.9
S20	Molly Carter	Newcastle	59531.25
S32	Dylan Smith	Hobart	59491.75
S3	Amber Denning	Newcastle	59475
S87	Zack Cruz	Wagga Wagga	59430.95
S181	Gabriel Price	Hobart	59412.7
S118	Maggie Fisher	Melbourne	59326.65
S163	Maddie Adams	Wollongong	59296.25
S63	Nicholas Jones	Hobart	59292.85
S53	Michelle Diaz	Brisbane	59285.5
S72	David Gonzalez	Sydney	59130.65
S24	Isabella Green	Wagga Wagga	59094.95
S65	Cole Thomas	Wollongong	58971.05
S38	Catherine Howard	Sydney	58960.7
S146	Christina Rodriguez	Adelaide	58906.5
S107	Marissa Summers	Brisbane	58898.75
S70	Caitlin Holliday	Sydney	58864.05
S131	Ethan Edwards	Hobart	58852.5
S103	Kate Sanchez	Sydney	58669.2
S22	Tony Young	Perth	58056.95
S160	Catherine Jones	Wagga Wagga	58003.95
S126	Emma Williams	Perth	57758.1
S145	Rachel Gonzalez	Melbourne	57709.9
S171	Dylan Campbell	Perth	57622.7
S177	Kelly James	Perth	57501.85
S20	Dylan Kelly	Newcastle	57453.85
S19	Kaitlyn Bingham	Newcastle	57271.75
S175	Sabrina Wright	Perth	57044.35
S197	Michael Carter	Hobart	56909.8
S112	Allison Campbell	Wagga Wagga	56902.15
S96	Peter James	Hobart	56621.9
S66	Cheyenne White	Darwin	56606.9
S42	Anna Fisher	Wagga Wagga	56540.65
S191	Andrea Andora	Brisbane	56521.6
S159	Grace Bailey	Hobart	56489.8
S174	Mary Cook	Wagga Wagga	56142.55
S198	Joe Nguyen	Wagga Wagga	56134.95
S49	Robert Gonzalez	Perth	55756.8
S18	Megan James	Newcastle	55704.5

S77	Sophia Reyes	Wagga Wagga	55640.35
S86	Paul Gutierrez	Perth	55601.65
S16	Jordan Turner	Newcastle	55584.3
S128	Danielle Bingham	Hobart	55516.8
S110	Zach Bell	Darwin	55216.6
S47	Carlos Perry	Sydney	55119.05
S123	Jade Rodriguez	Wagga Wagga	54960.7
S30	Tristan Nelson	Adelaide	54820.15
S189	Taylor Morales	Hobart	54726.8
S99	Vanessa King	Sydney	54423.45
S61	Aaron Russell	Brisbane	54410.4
S141	Charles Gomez	Perth	54377.5
S166	Jonathan Perez	Wollongong	54322.95
S115	Charles Timson	Perth	54310
S97	Caitlin Ross	Perth	54266.7
S46	Andrea Moore	Sydney	54070
S64	Robert Richardson	Wollongong	53713.5
S26	Makayla Diaz	Darwin	53644.5
S55	Maddie Foster	Brisbane	53622.95
S23	Caroline Ward	Melbourne	53481.55
S117	Catherine Moore	Sydney	53411.9
S180	Alexa Gutierrez	Darwin	52929.7
S28	Jose Cook	Wagga Wagga	52889.05
S25	Trevor Moore	Melbourne	52882.4
S57	Sarah Murphy	Wagga Wagga	52827.6
S93	Nate Bennett	Melbourne	52687.45
S105	Paul Gutierrez	Perth	52605.35
S148	Jade PDenningips	Melbourne	52585.3
S120	Perth Peterson	Wagga Wagga	52471.65
S84	Laura Stewart	Wagga Wagga	52435.8
S82	Tristan Long	Brisbane	52010.25
S100	Maddie Diaz	Melbourne	51800.05
S130	Josh Black	Hobart	51780.5
S8	Michelle Miller	Newcastle	51525.55
S125	Leah Green	Melbourne	51445.2
S124	Chase Green	Wollongong	51337.6
S184	Mark Nelson	Wagga Wagga	51261.3
S185	Chase Carter	Melbourne	50772.35
S183	Cole Smith	Brisbane	50339
S17	Daniel Baker	Newcastle	49842.95
S73	John White	Sydney	49744.65
S4	Robert Timson	Newcastle	49649.5

S80	Cheyenne Bingham	Wagga Wagga	48674.25
S76	Marissa Turner	Wagga Wagga	48493.45
S69	Tony Murphy	Darwin	48478.9
S161	Jason Timson	Brisbane	48447.4
S9	Mélissa Garcia	Newcastle	48084.3
S144	Anna Smith	Wagga Wagga	47695.5
S194	Maggie Gomez	Darwin	47686.65
S37	Zoe Gonzalez	Adelaide	47614.45
S176	Leah Bingham	Sydney	47421.5
S135	Lexi James	Perth	47045.6
S158	Mélissa Adams	Wagga Wagga	46939.1
S133	Andrea Sanchez	Melbourne	46882.5
S39	Gabrielle Thomas	Darwin	46802.65
S164	Thomas Foster	Sydney	46284.5
S11	Gavin Thompson	Newcastle	46024.6
S168	Alexa Holliday	Melbourne	45680.85
S98	Jonathan Collins	Brisbane	45407.7
S51	Haley Taylor	Brisbane	44564.1
S43	Amber Bingham	Sydney	43543.35
S192	Austin Davis	Wagga Wagga	40572.8

## Overall top 10 salesperson by \$ earned.

```

SELECT TOP 10
    [Staff ID],
    [Staff First Name] + ' ' + [Staff Surname] AS SalespersonName,
    [Office Location],
    SUM([Row Total]) AS TotalSales
FROM
    [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY
    [Staff ID],
    [Staff First Name],
    [Staff Surname],
    [Office Location]
ORDER BY
    TotalSales DESC;

```

Raw output of SQL Script:

Overall top 10 salesperson by \$ earned				
Staff ID	SalespersonName	TotalSales		Office Location
S187	Savannah Jones	81213.15		Wollongong
S45	Emma Gutierrez	79066.95		Hobart

S178	Kaitlyn Nguyen	76289.95	Sydney
S122	Austin Morris	75593.9	Adelaide
S71	Danielle Myers	75260.1	Adelaide
S193	Savannah Garcia	73877.9	Hobart
S106	Mia Foster	73567.9	Wagga Wagga
S190	Samuel Anderson	73311.7	Perth
S101	Jenna Cox	73256.55	Darwin
S104	Jake Cox	72692.9	Wagga Wagga

## Top salesperson for each month out of all offices, based on the number of transactions they've made.

To find the top salesperson for each month based on the number of transactions they've made, we counted the distinct [Receipt Id] for each salesperson. Using [Receipt Id] as a unique identifier for a transaction for each salesperson for each month and then ranks them using the ROW\_NUMBER() window function. The main SELECT statement then filters out only the top salesperson for each month based on the total number of transactions.

```

WITH MonthlyTransactions AS
(
    SELECT
        YEAR([Sale Date]) AS Year,
        MONTH([Sale Date]) AS Month,
        [Office Location],
        [Staff ID],
        [Staff First Name] + ' ' + [Staff Surname] AS SalespersonName,
        COUNT(DISTINCT [Receipt Id]) AS TotalTransactions,
        ROW_NUMBER() OVER (PARTITION BY YEAR([Sale Date]), MONTH([Sale Date])
                           ORDER BY COUNT(DISTINCT [Receipt Id]) DESC) AS Rank
    FROM
        [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
    GROUP BY
        YEAR([Sale Date]),
        MONTH([Sale Date]),
        [Office Location],
        [Staff ID],
        [Staff First Name] + ' ' + [Staff Surname]
)
SELECT
    Year,
    Month,
    [Office Location],
    [Staff ID],
    SalespersonName,
    TotalTransactions
FROM
    MonthlyTransactions
WHERE

```

```

Rank = 1
ORDER BY
Year,
Month;

```

Raw output of SQL Script:

Top salesperson for each month out of all offices, based on the number of transactions they've made.					
Year	Month	Office Location	Staff ID	SalespersonName	TotalTransactions
2021	7	Wollongong	S41	Victoria Cotton	19
2021	8	Melbourne	S119	Carlos King	17
2021	9	Wollongong	S187	Savannah Jones	15
2021	10	Adelaide	S153	Joey Clark	17
2021	11	Sydney	S103	Kate Sanchez	16
2021	12	Wagga Wagga	S108	Isaiah Powell	21
2022	1	Sydney	S117	Catherine Moore	15
2022	2	Sydney	S79	Caleb Nguyen	15
2022	3	Wagga Wagga	S106	Mia Foster	17
2022	4	Sydney	S99	Vanessa King	18
2022	5	Perth	S175	Sabrina Wright	17
2022	6	Sydney	S38	Catherine Howard	17

## Top salesperson for each month based on the number of transactions they've made, at Each office location.

To achieve this we include [Office Location] in our partitioning criteria for the ROW\_NUMBER() function. This script will give you the top salesperson based on the number of transactions they've made for each month at each office location.

```

WITH MonthlyTransactions AS
(
    SELECT
        YEAR([Sale Date]) AS Year,
        MONTH([Sale Date]) AS Month,
        [Office Location],
        [Staff ID],
        [Staff First Name] + ' ' + [Staff Surname] AS SalespersonName,
        COUNT(DISTINCT [Receipt Id]) AS TotalTransactions,
        ROW_NUMBER() OVER (PARTITION BY YEAR([Sale Date]), MONTH([Sale Date]), [Office
Location]
                                ORDER BY COUNT(DISTINCT [Receipt Id]) DESC) AS Rank
    FROM
        [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
    GROUP BY
        YEAR([Sale Date]),
        MONTH([Sale Date]),

```

```

        [Office Location],
        [Staff ID],
        [Staff First Name] + ' ' + [Staff Surname]
    )

SELECT
    Year,
    Month,
    [Office Location],
    [Staff ID],
    SalespersonName,
    TotalTransactions
FROM
    MonthlyTransactions
WHERE
    Rank = 1
ORDER BY
    Year,
    Month,
    [Office Location];

```

Raw output of SQL Script:

Top salesperson for each month based on the number of transactions they've made, at Each office location					
Year	Month	Office Location	Staff ID	SalespersonName	TotalTransactions
2021	7	Adelaide	S129	Jennifer Smith	15
2021	7	Brisbane	S48	James Kelly	14
2021	7	Darwin	S39	Gabrielle Thomas	12
2021	7	Hobart	S159	Grace Bailey	16
2021	7	Melbourne	S125	Leah Green	13
2021	7	Newcastle	S3	Amber Denning	14
2021	7	Perth	S190	Samuel Anderson	14
2021	7	Sydney	S72	David Gonzalez	15
2021	7	Wagga Wagga	S127	Sean Kelly	17
2021	7	Wollongong	S41	Victoria Cotton	19
2021	8	Adelaide	S71	Danielle Myers	14
2021	8	Brisbane	S53	Michelle Diaz	13
2021	8	Darwin	S167	Bryan Walker	13
2021	8	Hobart	S85	Jose Diaz	13
2021	8	Melbourne	S119	Carlos King	17
2021	8	Newcastle	S2	Joseph Reed	14
2021	8	Perth	S177	Kelly James	15
2021	8	Sydney	S47	Carlos Perry	15
2021	8	Wagga Wagga	S108	Isaiah Powell	16
2021	8	Wollongong	S29	Sam Scott	13
2021	9	Adelaide	S162	Tristan Smith	13
2021	9	Brisbane	S154	Zoe Barnes	14
2021	9	Darwin	S31	Claire Jones	11



2021	9	Hobart	S130	Josh Black	14
2021	9	Melbourne	S151	Cole Rodriguez	12
2021	9	Newcastle	S6	Evan Denning	14
2021	9	Perth	S97	Caitlin Ross	13
2021	9	Sydney	S73	John White	12
2021	9	Wagga Wagga	S77	Sophia Reyes	13
2021	9	Wollongong	S187	Savannah Jones	15
2021	10	Adelaide	S153	Joey Clark	17
2021	10	Brisbane	S157	Isabella Green	12
2021	10	Darwin	S167	Bryan Walker	14
2021	10	Hobart	S132	Eli Powell	15
2021	10	Melbourne	S109	Nicole Hernandez	13
2021	10	Newcastle	S14	Noah Cotton	13
2021	10	Perth	S49	Robert Gonzalez	13
2021	10	Sydney	S178	Kaitlyn Nguyen	16
2021	10	Wagga Wagga	S198	Joe Nguyen	14
2021	10	Wollongong	S170	Courtney Holliday	12
2021	11	Adelaide	S153	Joey Clark	15
2021	11	Brisbane	S60	Nick Collins	15
2021	11	Darwin	S39	Gabrielle Thomas	14
2021	11	Hobart	S193	Savannah Garcia	16
2021	11	Melbourne	S145	Rachel Gonzalez	15
2021	11	Newcastle	S3	Amber Denning	12
2021	11	Perth	S105	Paul Gutierrez	14
2021	11	Sydney	S103	Kate Sanchez	16
2021	11	Wagga Wagga	S186	Jake Wilson	14
2021	11	Wollongong	S139	Ryan Holliday	13
2021	12	Adelaide	S88	Nicole Rodriguez	15
2021	12	Brisbane	S107	Marissa Summers	17
2021	12	Darwin	S75	Robert Evans	12
2021	12	Hobart	S197	Michael Carter	11
2021	12	Melbourne	S119	Carlos King	14
2021	12	Newcastle	S6	Evan Denning	16
2021	12	Perth	S190	Samuel Anderson	13
2021	12	Sydney	S137	Jessica PDenningips	13
2021	12	Wagga Wagga	S108	Isaiah Powell	21
2021	12	Wollongong	S124	Chase Green	14
2022	1	Adelaide	S71	Danielle Myers	12
2022	1	Brisbane	S55	Maddie Foster	12
2022	1	Darwin	S66	Cheyenne White	12
2022	1	Hobart	S45	Emma Gutierrez	14
2022	1	Melbourne	S109	Nicole Hernandez	14
2022	1	Newcastle	S3	Amber Denning	14

2022	1	Perth	S90	Jack Bailey	11
2022	1	Sydney	S117	Catherine Moore	15
2022	1	Wagga Wagga	S112	Allison Campbell	14
2022	1	Wollongong	S170	Courtney Holliday	13
2022	2	Adelaide	S196	Devin Brown	12
2022	2	Brisbane	S98	Jonathan Collins	13
2022	2	Darwin	S180	Alexa Gutierrez	12
2022	2	Hobart	S181	Gabriel Price	10
2022	2	Melbourne	S185	Chase Carter	13
2022	2	Newcastle	S3	Amber Denning	12
2022	2	Perth	S190	Samuel Anderson	12
2022	2	Sydney	S79	Caleb Nguyen	15
2022	2	Wagga Wagga	S174	Mary Cook	14
2022	2	Wollongong	S94	Shane Smith	10
2022	3	Adelaide	S122	Austin Morris	13
2022	3	Brisbane	S98	Jonathan Collins	12
2022	3	Darwin	S91	Mike Rodriguez	11
2022	3	Hobart	S193	Savannah Garcia	15
2022	3	Melbourne	S151	Cole Rodriguez	14
2022	3	Newcastle	S2	Joseph Reed	15
2022	3	Perth	S78	Sophie Richardson	15
2022	3	Sydney	S46	Andrea Moore	13
2022	3	Wagga Wagga	S106	Mia Foster	17
2022	3	Wollongong	S139	Ryan Holliday	11
2022	4	Adelaide	S146	Christina Rodriguez	14
2022	4	Brisbane	S53	Michelle Diaz	16
2022	4	Darwin	S173	Jordan Brown	17
2022	4	Hobart	S45	Emma Gutierrez	15
2022	4	Melbourne	S134	Joe King	13
2022	4	Newcastle	S2	Joseph Reed	12
2022	4	Perth	S175	Sabrina Wright	13
2022	4	Sydney	S99	Vanessa King	18
2022	4	Wagga Wagga	S120	Perth Peterson	14
2022	4	Wollongong	S64	Robert Richardson	13
2022	5	Adelaide	S68	Isaiah Cruz	15
2022	5	Brisbane	S35	Adam Diaz	16
2022	5	Darwin	S172	Stephen Roberts	16
2022	5	Hobart	S96	Peter James	11
2022	5	Melbourne	S81	Justin Johnson	14
2022	5	Newcastle	S10	Jonathan Jenkins	15
2022	5	Perth	S175	Sabrina Wright	17
2022	5	Sydney	S165	Marcus Ross	13
2022	5	Wagga Wagga	S186	Jake Wilson	16

2022	5	Wollongong	S29	Sam Scott	13
2022	6	Adelaide	S129	Jennifer Smith	13
2022	6	Brisbane	S183	Cole Smith	12
2022	6	Darwin	S91	Mike Rodriguez	14
2022	6	Hobart	S85	Jose Diaz	14
2022	6	Melbourne	S119	Carlos King	14
2022	6	Newcastle	S15	Bailey Green	14
2022	6	Perth	S140	Alexandra Carter	12
2022	6	Sydney	S38	Catherine Howard	17
2022	6	Wagga Wagga	S83	Heather King	15
2022	6	Wollongong	S187	Savannah Jones	15

## Top salesperson based on the most goods sold, out of all office locations for each month.

To find the top salesperson based on the most goods sold, we sum up the [Item Quantity] for each salesperson. The script below will give you the top salesperson based on the most goods sold for each month at each office location.

```
WITH MonthlyGoodsSold AS
(
    SELECT
        YEAR([Sale Date]) AS Year,
        MONTH([Sale Date]) AS Month,
        [Office Location],
        [Staff ID],
        [Staff First Name] + ' ' + [Staff Surname] AS SalespersonName,
        SUM([Item Quantity]) AS TotalGoodsSold,
        ROW_NUMBER() OVER (PARTITION BY YEAR([Sale Date]), MONTH([Sale Date])
                            ORDER BY SUM([Item Quantity]) DESC) AS Rank
    FROM
        [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
    GROUP BY
        YEAR([Sale Date]),
        MONTH([Sale Date]),
        [Office Location],
        [Staff ID],
        [Staff First Name] + ' ' + [Staff Surname]
)

SELECT
    Year,
    Month,
    [Office Location],
    [Staff ID],
    SalespersonName,
    TotalGoodsSold
FROM
```

```

MonthlyGoodsSold
WHERE
    Rank = 1
ORDER BY
    Year,
    Month;

```

Raw output of SQL Script:

Top salesperson based on the most goods sold, out of all office locations for each month.					
Year	Month	Office Location	Staff ID	SalespersonName	TotalGoodsSold
2021	7	Sydney	S72	David Gonzalez	597
2021	8	Melbourne	S119	Carlos King	564
2021	9	Brisbane	S154	Zoe Barnes	501
2021	10	Adelaide	S153	Joey Clark	624
2021	11	Wagga Wagga	S186	Jake Wilson	517
2021	12	Wagga Wagga	S108	Isaiah Powell	635
2022	1	Wagga Wagga	S112	Allison Campbell	519
2022	2	Newcastle	S4	Robert Timson	536
2022	3	Wagga Wagga	S106	Mia Foster	636
2022	4	Brisbane	S53	Michelle Diaz	557
2022	5	Darwin	S167	Bryan Walker	566
2022	6	Wollongong	S187	Savannah Jones	564

## Overall Best salesperson by most transactions made.

```

SELECT
    [Staff ID],
    [Staff First Name] + ' ' + [Staff Surname] AS SalespersonName,
    COUNT(DISTINCT [Receipt Id]) AS TotalTransactions
FROM
    [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY
    [Staff ID],
    [Staff First Name],
    [Staff Surname]
ORDER BY
    TotalTransactions DESC;

```

Overall Best salesperson by most transactions made.		
Staff ID	SalespersonName	TotalTransactions
S196	Devin Brown	125
S190	Samuel Anderson	125

S104	Jake Cox	123
S45	Emma Gutierrez	122
S108	Isaiah Powell	121
S106	Mia Foster	120
S119	Carlos King	119
S62	Kaitlyn Anderson	118
S178	Kaitlyn Nguyen	116
S111	William Jamison	116
S44	Lexi Green	116
S193	Savannah Garcia	116
S122	Austin Morris	115
S154	Zoe Barnes	114
S38	Catherine Howard	114
S102	Cameron Smith	114
S3	Amber Denning	113
S129	Jennifer Smith	113
S187	Savannah Jones	113
S113	Emma Gray	113
S48	James Kelly	113
S85	Jose Diaz	113
S34	Kelly Reed	112
S136	Jasmine Rodriguez	112
S83	Heather King	112
S12	Leah Harris	111
S146	Christina Rodriguez	111
S186	Jake Wilson	111
S120	Perth Peterson	111
S143	Carlos Lewis	111
S167	Bryan Walker	111
S132	Eli Powell	111
S5	Stephanie Watson	110
S162	Tristan Smith	110
S68	Isaiah Cruz	110
S21	Megan Long	109
S155	Madison Cook	109
S15	Bailey Green	109
S95	Kaitlyn Scott	109
S179	Charles Roberts	109
S195	Noah Bailey	109
S27	Maria Andora	109
S6	Evan Denning	109
S128	Danielle Bingham	108

S165	Marcus Ross	108
S152	Grace Walker	108
S101	Jenna Cox	108
S188	Sam Cotton	108
S182	Maggie Jackson	108
S29	Sam Scott	108
S137	Jessica PDenningips	108
S96	Peter James	107
S33	Alexis Wright	107
S91	Mike Rodriguez	107
S2	Joseph Reed	107
S140	Alexandra Carter	107
S149	Eric Jones	107
S23	Caroline Ward	106
S81	Justin Johnson	106
S116	Adam Adams	106
S172	Stephen Roberts	106
S153	Joey Clark	106
S71	Danielle Myers	106
S10	Jonathan Jenkins	106
S127	Sean Kelly	105
S175	Sabrina Wright	105
S56	Anna Kelly	105
S139	Ryan Holliday	105
S151	Cole Rodriguez	105
S60	Nick Collins	105
S174	Mary Cook	104
S36	Andrew Cotton	104
S72	David Gonzalez	104
S61	Aaron Russell	104
S100	Maddie Diaz	104
S20	Molly Carter	104
S40	Nick Perry	103
S54	Joshua Long	103
S166	Jonathan Perez	103
S67	Carlos Brown	103
S173	Jordan Brown	103
S180	Alexa Gutierrez	103
S78	Sophie Richardson	103
S159	Grace Bailey	103
S31	Claire Jones	102
S41	Victoria Cotton	102

S150	Kyle Gutierrez	102
S88	Nicole Rodriguez	102
S63	Nicholas Jones	102
S97	Caitlin Ross	102
S156	Heather Nguyen	102
S87	Zack Cruz	101
S7	Molly Jackson	101
S138	Jade Kelly	101
S59	Jonathan Wilson	101
S8	Michelle Miller	101
S123	Jade Rodriguez	101
S125	Leah Green	101
S25	Trevor Moore	100
S163	Maddie Adams	100
S121	Michael Kelly	100
S75	Robert Evans	100
S134	Joe King	100
S198	Joe Nguyen	100
S53	Michelle Diaz	100
S103	Kate Sanchez	100
S11	Gavin Thompson	99
S70	Caitlin Holliday	99
S124	Chase Green	99
S189	Taylor Morales	99
S58	Samantha Fisher	99
S46	Andrea Moore	99
S92	Joshua Gonzalez	99
S28	Jose Cook	98
S170	Courtney Holliday	98
S160	Catherine Jones	98
S114	Erin Rivera	97
S77	Sophia Reyes	97
S93	Nate Bennett	97
S185	Chase Carter	97
S9	Mélissa Garcia	97
S145	Rachel Gonzalez	97
S64	Robert Richardson	97
S39	Gabrielle Thomas	97
S177	Kelly James	97
S79	Caleb Nguyen	97
S86	Paul Gutierrez	96
S20	Dylan Kelly	96

S99	Vanessa King	96
S94	Shane Smith	96
S147	Vanessa Andora	96
S191	Andrea Andora	96
S157	Isabella Green	96
S197	Michael Carter	96
S148	Jade PDenningips	95
S142	Noah Thomas	95
S14	Noah Cotton	95
S118	Maggie Fisher	95
S49	Robert Gonzalez	95
S200	Kyle Thomas	95
S107	Marissa Summers	95
S35	Adam Diaz	94
S112	Allison Campbell	94
S47	Carlos Perry	94
S158	Mélissa Adams	93
S65	Cole Thomas	93
S50	David Anderson	93
S89	Rebecca Kelly	93
S110	Zach Bell	92
S130	Josh Black	92
S131	Ethan Edwards	92
S69	Tony Murphy	92
S24	Isabella Green	91
S164	Thomas Foster	91
S22	Tony Young	91
S181	Gabriel Price	91
S176	Leah Bingham	91
S141	Charles Gomez	91
S90	Jack Bailey	91
S18	Megan James	90
S80	Cheyenne Bingham	90
S115	Charles Timson	90
S117	Catherine Moore	90
S109	Nicole Hernandez	90
S105	Paul Gutierrez	90
S73	John White	90
S169	Madison King	89
S133	Andrea Sanchez	89
S19	Kaitlyn Bingham	89
S74	Brittany Turner	89



S37	Zoe Gonzalez	89
S1	Lauren Martin	89
S55	Maddie Foster	89
S52	Isabella Rivera	89
S144	Anna Smith	88
S98	Jonathan Collins	88
S32	Dylan Smith	87
S4	Robert Timson	87
S82	Tristan Long	87
S17	Daniel Baker	87
S183	Cole Smith	87
S30	Tristan Nelson	86
S168	Alexa Holliday	86
S199	Maria Smith	86
S66	Cheyenne White	85
S161	Jason Timson	85
S57	Sarah Murphy	85
S194	Maggie Gomez	85
S192	Austin Davis	85
S184	Mark Nelson	84
S126	Emma Williams	84
S84	Laura Stewart	83
S42	Anna Fisher	83
S43	Amber Bingham	81
S135	Lexi James	81
S171	Dylan Campbell	80
S16	Jordan Turner	80
S76	Marissa Turner	79
S26	Makayla Diaz	78
S51	Haley Taylor	70

Top 10 Overall Best salesperson by most transactions made.

```

SELECT TOP 10
    [Staff ID],
    [Staff First Name] + ' ' + [Staff Surname] AS SalespersonName,
    [Office Location],
    COUNT(DISTINCT [Receipt Id]) AS TotalTransactions
FROM

```

```

[EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY
    [Staff ID],
    [Staff First Name],
    [Staff Surname],
    [Office Location]
ORDER BY
    TotalTransactions DESC;

```

Top 10 Overall Best salesperson by most transactions made.		
Staff ID	SalespersonName	Office Location
S190	Samuel Anderson	Perth
S196	Devin Brown	Adelaide
S104	Jake Cox	Wagga Wagga
S45	Emma Gutierrez	Hobart
S108	Isaiah Powell	Wagga Wagga
S106	Mia Foster	Wagga Wagga
S119	Carlos King	Melbourne
S62	Kaitlyn Anderson	Wagga Wagga
S111	William Jamison	Wagga Wagga
S44	Lexi Green	Sydney

Top salesperson based on the most goods sold for each month at each office location.

The script provided in the previous answer already calculates the top salesperson based on the most goods sold for each month at each office location. The partitioning criteria in the ROW\_NUMBER() function considers both the month and the [Office Location], ensuring that the top salesperson is determined independently for each location every month. This SQL script will provide you the top salesperson based on the most goods sold for each month at each office location.

```

WITH MonthlyGoodsSold AS
(
    SELECT
        YEAR([Sale Date]) AS Year,
        MONTH([Sale Date]) AS Month,
        [Office Location],
        [Staff ID],
        [Staff First Name] + ' ' + [Staff Surname] AS SalespersonName,
        SUM([Item Quantity]) AS TotalGoodsSold,

```

```

        ROW_NUMBER() OVER (PARTITION BY YEAR([Sale Date]), MONTH([Sale Date]), [Office
Location]
                            ORDER BY SUM([Item Quantity]) DESC) AS Rank
    FROM
        [EBUS3030_assignment_2].[dbo].[Assignment 2 Data$']
    GROUP BY
        YEAR([Sale Date]),
        MONTH([Sale Date]),
        [Office Location],
        [Staff ID],
        [Staff First Name] + ' ' + [Staff Surname]
)

SELECT
    Year,
    Month,
    [Office Location],
    [Staff ID],
    SalespersonName,
    TotalGoodsSold
FROM
    MonthlyGoodsSold
WHERE
    Rank = 1
ORDER BY
    Year,
    Month,
    [Office Location];

```

Raw output of SQL Script:

Top salesperson for each month based on the number of transactions they've made, at Each office location					
Year	Month	Office Location	Staff ID	SalespersonName	TotalTransactions
2021	7	Adelaide	S129	Jennifer Smith	15
2021	7	Brisbane	S48	James Kelly	14
2021	7	Darwin	S39	Gabrielle Thomas	12
2021	7	Hobart	S159	Grace Bailey	16
2021	7	Melbourne	S125	Leah Green	13
2021	7	Newcastle	S3	Amber Denning	14
2021	7	Perth	S190	Samuel Anderson	14
2021	7	Sydney	S72	David Gonzalez	15
2021	7	Wagga Wagga	S127	Sean Kelly	17
2021	7	Wollongong	S41	Victoria Cotton	19
2021	8	Adelaide	S71	Danielle Myers	14
2021	8	Brisbane	S53	Michelle Diaz	13
2021	8	Darwin	S167	Bryan Walker	13
2021	8	Hobart	S85	Jose Diaz	13
2021	8	Melbourne	S119	Carlos King	17
2021	8	Newcastle	S2	Joseph Reed	14

2021	8	Perth	S177	Kelly James	15
2021	8	Sydney	S47	Carlos Perry	15
2021	8	Wagga Wagga	S108	Isaiah Powell	16
2021	8	Wollongong	S29	Sam Scott	13
2021	9	Adelaide	S162	Tristan Smith	13
2021	9	Brisbane	S154	Zoe Barnes	14
2021	9	Darwin	S31	Claire Jones	11
2021	9	Hobart	S130	Josh Black	14
2021	9	Melbourne	S151	Cole Rodriguez	12
2021	9	Newcastle	S6	Evan Denning	14
2021	9	Perth	S97	Caitlin Ross	13
2021	9	Sydney	S73	John White	12
2021	9	Wagga Wagga	S77	Sophia Reyes	13
2021	9	Wollongong	S187	Savannah Jones	15
2021	10	Adelaide	S153	Joey Clark	17
2021	10	Brisbane	S157	Isabella Green	12
2021	10	Darwin	S167	Bryan Walker	14
2021	10	Hobart	S132	Eli Powell	15
2021	10	Melbourne	S109	Nicole Hernandez	13
2021	10	Newcastle	S14	Noah Cotton	13
2021	10	Perth	S49	Robert Gonzalez	13
2021	10	Sydney	S178	Kaitlyn Nguyen	16
2021	10	Wagga Wagga	S198	Joe Nguyen	14
2021	10	Wollongong	S170	Courtney Holliday	12
2021	11	Adelaide	S153	Joey Clark	15
2021	11	Brisbane	S60	Nick Collins	15
2021	11	Darwin	S39	Gabrielle Thomas	14
2021	11	Hobart	S193	Savannah Garcia	16
2021	11	Melbourne	S145	Rachel Gonzalez	15
2021	11	Newcastle	S3	Amber Denning	12
2021	11	Perth	S105	Paul Gutierrez	14
2021	11	Sydney	S103	Kate Sanchez	16
2021	11	Wagga Wagga	S186	Jake Wilson	14
2021	11	Wollongong	S139	Ryan Holliday	13
2021	12	Adelaide	S88	Nicole Rodriguez	15
2021	12	Brisbane	S107	Marissa Summers	17
2021	12	Darwin	S75	Robert Evans	12
2021	12	Hobart	S197	Michael Carter	11
2021	12	Melbourne	S119	Carlos King	14
2021	12	Newcastle	S6	Evan Denning	16
2021	12	Perth	S190	Samuel Anderson	13
2021	12	Sydney	S137	Jessica PDenningips	13
2021	12	Wagga Wagga	S108	Isaiah Powell	21

2021	12	Wollongong	S124	Chase Green	14
2022	1	Adelaide	S71	Danielle Myers	12
2022	1	Brisbane	S55	Maddie Foster	12
2022	1	Darwin	S66	Cheyenne White	12
2022	1	Hobart	S45	Emma Gutierrez	14
2022	1	Melbourne	S109	Nicole Hernandez	14
2022	1	Newcastle	S3	Amber Denning	14
2022	1	Perth	S90	Jack Bailey	11
2022	1	Sydney	S117	Catherine Moore	15
2022	1	Wagga Wagga	S112	Allison Campbell	14
2022	1	Wollongong	S170	Courtney Holliday	13
2022	2	Adelaide	S196	Devin Brown	12
2022	2	Brisbane	S98	Jonathan Collins	13
2022	2	Darwin	S180	Alexa Gutierrez	12
2022	2	Hobart	S181	Gabriel Price	10
2022	2	Melbourne	S185	Chase Carter	13
2022	2	Newcastle	S3	Amber Denning	12
2022	2	Perth	S190	Samuel Anderson	12
2022	2	Sydney	S79	Caleb Nguyen	15
2022	2	Wagga Wagga	S174	Mary Cook	14
2022	2	Wollongong	S94	Shane Smith	10
2022	3	Adelaide	S122	Austin Morris	13
2022	3	Brisbane	S98	Jonathan Collins	12
2022	3	Darwin	S91	Mike Rodriguez	11
2022	3	Hobart	S193	Savannah Garcia	15
2022	3	Melbourne	S151	Cole Rodriguez	14
2022	3	Newcastle	S2	Joseph Reed	15
2022	3	Perth	S78	Sophie Richardson	15
2022	3	Sydney	S46	Andrea Moore	13
2022	3	Wagga Wagga	S106	Mia Foster	17
2022	3	Wollongong	S139	Ryan Holliday	11
2022	4	Adelaide	S146	Christina Rodriguez	14
2022	4	Brisbane	S53	Michelle Diaz	16
2022	4	Darwin	S173	Jordan Brown	17
2022	4	Hobart	S45	Emma Gutierrez	15
2022	4	Melbourne	S134	Joe King	13
2022	4	Newcastle	S2	Joseph Reed	12
2022	4	Perth	S175	Sabrina Wright	13
2022	4	Sydney	S99	Vanessa King	18
2022	4	Wagga Wagga	S120	Perth Peterson	14
2022	4	Wollongong	S64	Robert Richardson	13
2022	5	Adelaide	S68	Isaiah Cruz	15
2022	5	Brisbane	S35	Adam Diaz	16

2022	5	Darwin	S172	Stephen Roberts	16
2022	5	Hobart	S96	Peter James	11
2022	5	Melbourne	S81	Justin Johnson	14
2022	5	Newcastle	S10	Jonathan Jenkins	15
2022	5	Perth	S175	Sabrina Wright	17
2022	5	Sydney	S165	Marcus Ross	13
2022	5	Wagga Wagga	S186	Jake Wilson	16
2022	5	Wollongong	S29	Sam Scott	13
2022	6	Adelaide	S129	Jennifer Smith	13
2022	6	Brisbane	S183	Cole Smith	12
2022	6	Darwin	S91	Mike Rodriguez	14
2022	6	Hobart	S85	Jose Diaz	14
2022	6	Melbourne	S119	Carlos King	14
2022	6	Newcastle	S15	Bailey Green	14
2022	6	Perth	S140	Alexandra Carter	12
2022	6	Sydney	S38	Catherine Howard	17
2022	6	Wagga Wagga	S83	Heather King	15
2022	6	Wollongong	S187	Savannah Jones	15

## Overall Best salesperson by most goods sold.

```

SELECT
    [Staff ID],
    [Staff First Name] + ' ' + [Staff Surname] AS SalespersonName,
    [Office Location],
    SUM([Item Quantity]) AS TotalGoodsSold
FROM
    [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY
    [Staff ID],
    [Staff First Name],
    [Staff Surname],
    [Office Location]
ORDER BY
    TotalGoodsSold DESC;

```

Raw output of SQL Script:

Overall Best salesperson by most goods sold.			
Staff ID	SalespersonName	Office Location	TotalGoodsSold
S190	Samuel Anderson	Perth	4005
S122	Austin Morris	Adelaide	3796
S101	Jenna Cox	Darwin	3730
S45	Emma Gutierrez	Hobart	3716

S108	Isaiah Powell	Wagga Wagga	3684
S106	Mia Foster	Wagga Wagga	3670
S104	Jake Cox	Wagga Wagga	3639
S129	Jennifer Smith	Adelaide	3638
S12	Leah Harris	Newcastle	3631
S56	Anna Kelly	Sydney	3615
S196	Devin Brown	Adelaide	3606
S119	Carlos King	Melbourne	3584
S113	Emma Gray	Melbourne	3584
S178	Kaitlyn Nguyen	Sydney	3580
S68	Isaiah Cruz	Adelaide	3568
S187	Savannah Jones	Wollongong	3555
S3	Amber Denning	Newcastle	3535
S62	Kaitlyn Anderson	Wagga Wagga	3534
S111	William Jamison	Wagga Wagga	3525
S6	Evan Denning	Newcastle	3503
S95	Kaitlyn Scott	Brisbane	3502
S154	Zoe Barnes	Brisbane	3493
S21	Megan Long	Wagga Wagga	3493
S167	Bryan Walker	Darwin	3469
S102	Cameron Smith	Hobart	3465
S143	Carlos Lewis	Sydney	3455
S156	Heather Nguyen	Adelaide	3449
S27	Maria Andora	Wollongong	3426
S179	Charles Roberts	Wagga Wagga	3424
S153	Joey Clark	Adelaide	3415
S44	Lexi Green	Sydney	3408
S172	Stephen Roberts	Darwin	3402
S48	James Kelly	Brisbane	3398
S188	Sam Cotton	Darwin	3396
S151	Cole Rodriguez	Melbourne	3392
S136	Jasmine Rodriguez	Melbourne	3386
S193	Savannah Garcia	Hobart	3380
S132	Eli Powell	Hobart	3370
S85	Jose Diaz	Hobart	3360
S5	Stephanie Watson	Newcastle	3355
S152	Grace Walker	Wollongong	3355
S186	Jake Wilson	Wagga Wagga	3354
S34	Kelly Reed	Wollongong	3352
S10	Jonathan Jenkins	Newcastle	3347
S33	Alexis Wright	Wagga Wagga	3345
S60	Nick Collins	Brisbane	3325

S140	Alexandra Carter	Perth	3318
S15	Bailey Green	Newcastle	3306
S163	Maddie Adams	Wollongong	3305
S182	Maggie Jackson	Melbourne	3295
S78	Sophie Richardson	Perth	3288
S7	Molly Jackson	Newcastle	3285
S162	Tristan Smith	Adelaide	3280
S155	Madison Cook	Adelaide	3267
S36	Andrew Cotton	Wagga Wagga	3261
S157	Isabella Green	Brisbane	3260
S91	Mike Rodriguez	Darwin	3259
S71	Danielle Myers	Adelaide	3258
S149	Eric Jones	Wollongong	3253
S116	Adam Adams	Perth	3251
S29	Sam Scott	Wollongong	3234
S83	Heather King	Wagga Wagga	3232
S54	Joshua Long	Perth	3231
S139	Ryan Holliday	Wollongong	3231
S127	Sean Kelly	Wagga Wagga	3224
S165	Marcus Ross	Sydney	3216
S128	Danielle Bingham	Hobart	3206
S114	Erin Rivera	Perth	3198
S96	Peter James	Hobart	3195
S142	Noah Thomas	Adelaide	3191
S2	Joseph Reed	Newcastle	3187
S103	Kate Sanchez	Sydney	3182
S138	Jade Kelly	Adelaide	3164
S59	Jonathan Wilson	Wagga Wagga	3162
S38	Catherine Howard	Sydney	3147
S67	Carlos Brown	Melbourne	3147
S174	Mary Cook	Wagga Wagga	3141
S175	Sabrina Wright	Perth	3135
S121	Michael Kelly	Sydney	3130
S200	Kyle Thomas	Darwin	3127
S146	Christina Rodriguez	Adelaide	3125
S150	Kyle Gutierrez	Perth	3107
S97	Caitlin Ross	Perth	3105
S137	Jessica PDenningips	Sydney	3104
S61	Aaron Russell	Brisbane	3094
S58	Samantha Fisher	Hobart	3081
S40	Nick Perry	Hobart	3079
S81	Justin Johnson	Melbourne	3063



S79	Caleb Nguyen	Sydney	3059
S72	David Gonzalez	Sydney	3052
S198	Joe Nguyen	Wagga Wagga	3023
S159	Grace Bailey	Hobart	3015
S173	Jordan Brown	Darwin	3013
S112	Allison Campbell	Wagga Wagga	3007
S145	Rachel Gonzalez	Melbourne	2998
S92	Joshua Gonzalez	Darwin	2990
S28	Jose Cook	Wagga Wagga	2989
S134	Joe King	Melbourne	2986
S87	Zack Cruz	Wagga Wagga	2979
S23	Caroline Ward	Melbourne	2976
S195	Noah Bailey	Melbourne	2975
S88	Nicole Rodriguez	Adelaide	2973
S47	Carlos Perry	Sydney	2968
S53	Michelle Diaz	Brisbane	2965
S180	Alexa Gutierrez	Darwin	2957
S75	Robert Evans	Darwin	2940
S170	Courtney Holliday	Wollongong	2936
S110	Zach Bell	Darwin	2934
S31	Claire Jones	Darwin	2932
S89	Rebecca Kelly	Brisbane	2926
S20	Molly Carter	Newcastle	2921
S20	Dylan Kelly	Newcastle	2919
S41	Victoria Cotton	Wollongong	2901
S35	Adam Diaz	Brisbane	2887
S115	Charles Timson	Perth	2882
S120	Perth Peterson	Wagga Wagga	2880
S166	Jonathan Perez	Wollongong	2879
S197	Michael Carter	Hobart	2878
S189	Taylor Morales	Hobart	2876
S8	Michelle Miller	Newcastle	2874
S160	Catherine Jones	Wagga Wagga	2866
S177	Kelly James	Perth	2864
S169	Madison King	Adelaide	2861
S25	Trevor Moore	Melbourne	2859
S32	Dylan Smith	Hobart	2846
S118	Maggie Fisher	Melbourne	2846
S74	Brittany Turner	Sydney	2844
S93	Nate Bennett	Melbourne	2837
S94	Shane Smith	Wollongong	2827
S50	David Anderson	Sydney	2826

S63	Nicholas Jones	Hobart	2823
S24	Isabella Green	Wagga Wagga	2822
S52	Isabella Rivera	Darwin	2821
S191	Andrea Andora	Brisbane	2821
S1	Lauren Martin	Newcastle	2815
S70	Caitlin Holliday	Sydney	2806
S147	Vanessa Andora	Melbourne	2805
S11	Gavin Thompson	Newcastle	2802
S4	Robert Timson	Newcastle	2802
S14	Noah Cotton	Newcastle	2799
S64	Robert Richardson	Wollongong	2790
S90	Jack Bailey	Perth	2788
S42	Anna Fisher	Wagga Wagga	2787
S125	Leah Green	Melbourne	2777
S185	Chase Carter	Melbourne	2766
S84	Laura Stewart	Wagga Wagga	2761
S107	Marissa Summers	Brisbane	2752
S46	Andrea Moore	Sydney	2748
S176	Leah Bingham	Sydney	2747
S22	Tony Young	Perth	2743
S123	Jade Rodriguez	Wagga Wagga	2742
S77	Sophia Reyes	Wagga Wagga	2736
S109	Nicole Hernandez	Melbourne	2735
S100	Maddie Diaz	Melbourne	2733
S181	Gabriel Price	Hobart	2726
S99	Vanessa King	Sydney	2722
S39	Gabrielle Thomas	Darwin	2720
S199	Maria Smith	Darwin	2714
S49	Robert Gonzalez	Perth	2708
S55	Maddie Foster	Brisbane	2707
S133	Andrea Sanchez	Melbourne	2699
S124	Chase Green	Wollongong	2698
S144	Anna Smith	Wagga Wagga	2696
S86	Paul Gutierrez	Perth	2693
S65	Cole Thomas	Wollongong	2691
S164	Thomas Foster	Sydney	2682
S126	Emma Williams	Perth	2680
S19	Kaitlyn Bingham	Newcastle	2675
S57	Sarah Murphy	Wagga Wagga	2674
S130	Josh Black	Hobart	2669
S148	Jade PDenningips	Melbourne	2664
S16	Jordan Turner	Newcastle	2647

S117	Catherine Moore	Sydney	2642
S105	Paul Gutierrez	Perth	2635
S82	Tristan Long	Brisbane	2631
S131	Ethan Edwards	Hobart	2630
S171	Dylan Campbell	Perth	2620
S141	Charles Gomez	Perth	2606
S98	Jonathan Collins	Brisbane	2602
S183	Cole Smith	Brisbane	2599
S184	Mark Nelson	Wagga Wagga	2596
S158	Mélissa Adams	Wagga Wagga	2576
S18	Megan James	Newcastle	2569
S9	Mélissa Garcia	Newcastle	2552
S194	Maggie Gomez	Darwin	2538
S26	Makayla Diaz	Darwin	2533
S66	Cheyenne White	Darwin	2506
S73	John White	Sydney	2491
S30	Tristan Nelson	Adelaide	2481
S80	Cheyenne Bingham	Wagga Wagga	2476
S168	Alexa Holliday	Melbourne	2468
S37	Zoe Gonzalez	Adelaide	2461
S69	Tony Murphy	Darwin	2448
S17	Daniel Baker	Newcastle	2422
S192	Austin Davis	Wagga Wagga	2410
S135	Lexi James	Perth	2372
S161	Jason Timson	Brisbane	2348
S76	Marissa Turner	Wagga Wagga	2312
S43	Amber Bingham	Sydney	2234
S51	Haley Taylor	Brisbane	2146

## Top 10 Overall Best salesperson by most goods sold.

```

SELECT TOP 10
    [Staff ID],
    [Staff First Name] + ' ' + [Staff Surname] AS SalespersonName,
    [Office Location],
    SUM([Item Quantity]) AS TotalGoodsSold
FROM
    [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY
    [Staff ID],
    [Staff First Name],
    [Staff Surname],
    [Office Location]

```

```
ORDER BY
    TotalGoodsSold DESC;
```

Raw output of SQL Script:

Top 10 Overall Best salesperson by most goods sold.			
Staff ID	Office Location	SalespersonName	TotalGoodsSold
S190	Perth	Samuel Anderson	4005
S122	Adelaide	Austin Morris	3796
S101	Darwin	Jenna Cox	3730
S45	Hobart	Emma Gutierrez	3716
S108	Wagga Wagga	Isaiah Powell	3684
S106	Wagga Wagga	Mia Foster	3670
S104	Wagga Wagga	Jake Cox	3639
S129	Adelaide	Jennifer Smith	3638
S12	Newcastle	Leah Harris	3631
S56	Sydney	Anna Kelly	3615

## Best-performing stores and number of employees working on that store (This is done for the whole year).

To determine the best-performing stores based on total sales while counting the number of distinct employees working at each store, we sum the sales for each store and order the result in descending order. This script below will list the stores by their total sales in descending order, showing both the sales amount and the number of unique employees at each store. The best-performing store (in terms of total sales) will be at the top.

```
SELECT
    [Office Location] AS Store,
    SUM([Row Total]) AS TotalSalesAmount,
    COUNT(DISTINCT [Staff ID]) AS NumberOfEmployees
FROM
    [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY
    [Office Location]
ORDER BY
    TotalSalesAmount DESC;
```

The script below will calculate the ratio of total sales to the number of employees for each store and then list the stores by this ratio in descending order. The store with the highest sales per employee will be at the top. When comparing data we can look into population of each city too.

```

WITH StoreSales AS (
    SELECT
        [Office Location] AS Store,
        SUM([Row Total]) AS TotalSalesAmount,
        COUNT(DISTINCT [Staff ID]) AS NumberOfEmployees
    FROM
        [EBUS3030_assignment_2].[dbo].[Assignment 2 Data$]
    GROUP BY
        [Office Location]
)

SELECT
    Store,
    TotalSalesAmount,
    NumberOfEmployees,
    (TotalSalesAmount * 1.0 / NumberOfEmployees) AS SalesPerEmployee
FROM
    StoreSales
ORDER BY
    SalesPerEmployee DESC;

```

Raw output of SQL Script:

Best-performing stores based on total sales (count of employees working at each store)				
Store	TotalSalesAmount	NumberOfEmployees		
Wagga Wagga	1902270.85	32		
Sydney	1309290.8	22		
Melbourne	1270410.3	22		
Perth	1171929.9	20		
Newcastle	1167716.6	19		
Darwin	1150447.25	19		
Hobart	1059141.65	17		
Adelaide	1054211.9	16		
Brisbane	983439.45	17		
Wollongong	938812.3	15		
Ratio of total sales to the number of employees for each store				
Store	TotalSalesAmount	NumberOfEmployees	SalesPerEmployee	
Adelaide	1054211.9	16	65888.24375	
Wollongong	938812.3	15	62587.48667	
Hobart	1059141.65	17	62302.45	
Newcastle	1167716.6	19	61458.76842	
Darwin	1150447.25	19	60549.85526	
Sydney	1309290.8	22	59513.21818	
Wagga Wagga	1902270.85	32	59445.96406	
Perth	1171929.9	20	58596.495	

Brisbane	983439.45	17	57849.37941		
Melbourne	1270410.3	22	57745.92273		

### Determining the three most popular items in each store for each month.

To determine the three most popular items in each store for each month, we used the ROW\_NUMBER() function, partitioned by month, office location, and ordered by the quantity sold for each item. This SQL script will give you the three most popular items for each store (office location) based on the quantity sold for each month.

```

WITH MonthlyPopularItems AS
(
    SELECT
        YEAR([Sale Date]) AS Year,
        MONTH([Sale Date]) AS Month,
        [Office Location],
        [Item ID],
        [Item Description],
        SUM([Item Quantity]) AS TotalQuantitySold,
        ROW_NUMBER() OVER (PARTITION BY YEAR([Sale Date]), MONTH([Sale Date]), [Office
Location]
                                ORDER BY SUM([Item Quantity]) DESC) AS Rank
    FROM
        [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
    GROUP BY
        YEAR([Sale Date]),
        MONTH([Sale Date]),
        [Office Location],
        [Item ID],
        [Item Description]
)

SELECT
    Year,
    Month,
    [Office Location],
    [Item ID],
    [Item Description],
    TotalQuantitySold
FROM
    MonthlyPopularItems
WHERE
    Rank <= 3
ORDER BY
    Year,
    Month,
    [Office Location],
    Rank;

```

Raw output of SQL Script:

Determining the three most popular items in each store for each month.					
Year	Month	Office Location	Item ID	Item Description	TotalQuantitySold
2021	7	Adelaide	28	Drill Driver Phillips head	211
2021	7	Adelaide	27	Drill Bit 10 mm	177
2021	7	Adelaide	26	Drill Bit 9 mm	169
2021	7	Brisbane	5	Tape Measure	180
2021	7	Brisbane	12	Glue	172
2021	7	Brisbane	20	Drill Bit 3 mm	170
2021	7	Darwin	11	Grinder	199
2021	7	Darwin	27	Drill Bit 10 mm	198
2021	7	Darwin	12	Glue	188
2021	7	Hobart	7	Mitre Saw	238
2021	7	Hobart	2	Screwdriver Set	221
2021	7	Hobart	1	Hammer	214
2021	7	Melbourne	8	Hacksaw	260
2021	7	Melbourne	12	Glue	236
2021	7	Melbourne	29	Drill Driver Flat Head	218
2021	7	Newcastle	24	Drill Bit 7 mm	253
2021	7	Newcastle	22	Drill Bit 5 mm	239
2021	7	Newcastle	15	Picture Hook	228
2021	7	Perth	18	Garden Hose	253
2021	7	Perth	30	Drill Driver Hex head	241
2021	7	Perth	21	Drill Bit 4 mm	229
2021	7	Sydney	28	Drill Driver Phillips head	278
2021	7	Sydney	22	Drill Bit 5 mm	258
2021	7	Sydney	14	Square	238
2021	7	Wagga Wagga	14	Square	422
2021	7	Wagga Wagga	25	Drill Bit 8 mm	401
2021	7	Wagga Wagga	24	Drill Bit 7 mm	364
2021	7	Wollongong	7	Mitre Saw	203
2021	7	Wollongong	1	Hammer	201
2021	7	Wollongong	26	Drill Bit 9 mm	184
2021	8	Adelaide	18	Garden Hose	199
2021	8	Adelaide	22	Drill Bit 5 mm	190
2021	8	Adelaide	12	Glue	184
2021	8	Brisbane	24	Drill Bit 7 mm	243
2021	8	Brisbane	10	Cordless Drill Kit	181
2021	8	Brisbane	15	Picture Hook	175
2021	8	Darwin	26	Drill Bit 9 mm	225
2021	8	Darwin	9	Box of Screws	222
2021	8	Darwin	16	Socket Set	222

2021	8	Hobart	6	Paint Roller Kit	184
2021	8	Hobart	30	Drill Driver Hex head	183
2021	8	Hobart	11	Grinder	177
2021	8	Melbourne	26	Drill Bit 9 mm	334
2021	8	Melbourne	3	Axe	260
2021	8	Melbourne	2	Screwdriver Set	253
2021	8	Newcastle	13	Ruler	233
2021	8	Newcastle	26	Drill Bit 9 mm	217
2021	8	Newcastle	7	Mitre Saw	209
2021	8	Perth	25	Drill Bit 8 mm	239
2021	8	Perth	3	Axe	235
2021	8	Perth	24	Drill Bit 7 mm	223
2021	8	Sydney	28	Drill Driver Phillips head	291
2021	8	Sydney	8	Hacksaw	273
2021	8	Sydney	20	Drill Bit 3 mm	262
2021	8	Wagga Wagga	21	Drill Bit 4 mm	368
2021	8	Wagga Wagga	24	Drill Bit 7 mm	346
2021	8	Wagga Wagga	5	Tape Measure	338
2021	8	Wollongong	23	Drill Bit 6 mm	184
2021	8	Wollongong	21	Drill Bit 4 mm	182
2021	8	Wollongong	4	Box of Nails	180
2021	9	Adelaide	30	Drill Driver Hex head	170
2021	9	Adelaide	25	Drill Bit 8 mm	152
2021	9	Adelaide	14	Square	147
2021	9	Brisbane	12	Glue	177
2021	9	Brisbane	8	Hacksaw	173
2021	9	Brisbane	18	Garden Hose	170
2021	9	Darwin	20	Drill Bit 3 mm	207
2021	9	Darwin	28	Drill Driver Phillips head	196
2021	9	Darwin	13	Ruler	191
2021	9	Hobart	10	Cordless Drill Kit	209
2021	9	Hobart	18	Garden Hose	199
2021	9	Hobart	2	Screwdriver Set	196
2021	9	Melbourne	6	Paint Roller Kit	228
2021	9	Melbourne	28	Drill Driver Phillips head	227
2021	9	Melbourne	17	Punch	220
2021	9	Newcastle	14	Square	280
2021	9	Newcastle	25	Drill Bit 8 mm	261
2021	9	Newcastle	23	Drill Bit 6 mm	241
2021	9	Perth	16	Socket Set	217
2021	9	Perth	4	Box of Nails	215
2021	9	Perth	7	Mitre Saw	208
2021	9	Sydney	5	Tape Measure	235



2021	9	Sydney	28	Drill Driver Phillips head	235
2021	9	Sydney	25	Drill Bit 8 mm	232
2021	9	Wagga Wagga	21	Drill Bit 4 mm	294
2021	9	Wagga Wagga	11	Grinder	289
2021	9	Wagga Wagga	14	Square	286
2021	9	Wollongong	5	Tape Measure	204
2021	9	Wollongong	25	Drill Bit 8 mm	197
2021	9	Wollongong	29	Drill Driver Flat Head	180
2021	10	Adelaide	12	Glue	299
2021	10	Adelaide	25	Drill Bit 8 mm	238
2021	10	Adelaide	6	Paint Roller Kit	225
2021	10	Brisbane	15	Picture Hook	161
2021	10	Brisbane	29	Drill Driver Flat Head	160
2021	10	Brisbane	20	Drill Bit 3 mm	159
2021	10	Darwin	29	Drill Driver Flat Head	242
2021	10	Darwin	17	Punch	215
2021	10	Darwin	9	Box of Screws	204
2021	10	Hobart	22	Drill Bit 5 mm	242
2021	10	Hobart	16	Socket Set	203
2021	10	Hobart	14	Square	201
2021	10	Melbourne	4	Box of Nails	246
2021	10	Melbourne	7	Mitre Saw	242
2021	10	Melbourne	12	Glue	227
2021	10	Newcastle	4	Box of Nails	250
2021	10	Newcastle	24	Drill Bit 7 mm	212
2021	10	Newcastle	16	Socket Set	205
2021	10	Perth	12	Glue	252
2021	10	Perth	25	Drill Bit 8 mm	216
2021	10	Perth	3	Axe	211
2021	10	Sydney	26	Drill Bit 9 mm	346
2021	10	Sydney	14	Square	271
2021	10	Sydney	23	Drill Bit 6 mm	262
2021	10	Wagga Wagga	30	Drill Driver Hex head	345
2021	10	Wagga Wagga	29	Drill Driver Flat Head	334
2021	10	Wagga Wagga	27	Drill Bit 10 mm	318
2021	10	Wollongong	29	Drill Driver Flat Head	209
2021	10	Wollongong	3	Axe	179
2021	10	Wollongong	6	Paint Roller Kit	162
2021	11	Adelaide	15	Picture Hook	216
2021	11	Adelaide	26	Drill Bit 9 mm	214
2021	11	Adelaide	11	Grinder	201
2021	11	Brisbane	3	Axe	198
2021	11	Brisbane	19	Drill Bit 2 mm	176

2021	11	Brisbane	7	Mitre Saw	173
2021	11	Darwin	18	Garden Hose	226
2021	11	Darwin	20	Drill Bit 3 mm	217
2021	11	Darwin	7	Mitre Saw	212
2021	11	Hobart	1	Hammer	221
2021	11	Hobart	28	Drill Driver Phillips head	214
2021	11	Hobart	2	Screwdriver Set	197
2021	11	Melbourne	1	Hammer	280
2021	11	Melbourne	23	Drill Bit 6 mm	259
2021	11	Melbourne	20	Drill Bit 3 mm	257
2021	11	Newcastle	18	Garden Hose	247
2021	11	Newcastle	22	Drill Bit 5 mm	242
2021	11	Newcastle	13	Ruler	226
2021	11	Perth	30	Drill Driver Hex head	236
2021	11	Perth	26	Drill Bit 9 mm	229
2021	11	Perth	15	Picture Hook	208
2021	11	Sydney	15	Picture Hook	267
2021	11	Sydney	2	Screwdriver Set	260
2021	11	Sydney	24	Drill Bit 7 mm	246
2021	11	Wagga Wagga	8	Hacksaw	357
2021	11	Wagga Wagga	5	Tape Measure	334
2021	11	Wagga Wagga	20	Drill Bit 3 mm	330
2021	11	Wollongong	16	Socket Set	235
2021	11	Wollongong	28	Drill Driver Phillips head	206
2021	11	Wollongong	3	Axe	204
2021	12	Adelaide	25	Drill Bit 8 mm	233
2021	12	Adelaide	24	Drill Bit 7 mm	229
2021	12	Adelaide	11	Grinder	211
2021	12	Brisbane	18	Garden Hose	226
2021	12	Brisbane	30	Drill Driver Hex head	210
2021	12	Brisbane	27	Drill Bit 10 mm	193
2021	12	Darwin	23	Drill Bit 6 mm	215
2021	12	Darwin	20	Drill Bit 3 mm	208
2021	12	Darwin	12	Glue	190
2021	12	Hobart	13	Ruler	180
2021	12	Hobart	19	Drill Bit 2 mm	179
2021	12	Hobart	27	Drill Bit 10 mm	177
2021	12	Melbourne	1	Hammer	290
2021	12	Melbourne	15	Picture Hook	274
2021	12	Melbourne	28	Drill Driver Phillips head	269
2021	12	Newcastle	7	Mitre Saw	236
2021	12	Newcastle	13	Ruler	190
2021	12	Newcastle	24	Drill Bit 7 mm	189

2021	12	Perth	4	Box of Nails	241
2021	12	Perth	3	Axe	231
2021	12	Perth	26	Drill Bit 9 mm	215
2021	12	Sydney	18	Garden Hose	258
2021	12	Sydney	5	Tape Measure	247
2021	12	Sydney	1	Hammer	225
2021	12	Wagga Wagga	5	Tape Measure	396
2021	12	Wagga Wagga	30	Drill Driver Hex head	368
2021	12	Wagga Wagga	15	Picture Hook	364
2021	12	Wollongong	7	Mitre Saw	199
2021	12	Wollongong	5	Tape Measure	185
2021	12	Wollongong	30	Drill Driver Hex head	177
2022	1	Adelaide	14	Square	191
2022	1	Adelaide	8	Hacksaw	178
2022	1	Adelaide	16	Socket Set	157
2022	1	Brisbane	16	Socket Set	177
2022	1	Brisbane	13	Ruler	174
2022	1	Brisbane	25	Drill Bit 8 mm	162
2022	1	Darwin	10	Cordless Drill Kit	228
2022	1	Darwin	3	Axe	203
2022	1	Darwin	13	Ruler	196
2022	1	Hobart	3	Axe	220
2022	1	Hobart	25	Drill Bit 8 mm	204
2022	1	Hobart	10	Cordless Drill Kit	190
2022	1	Melbourne	19	Drill Bit 2 mm	288
2022	1	Melbourne	2	Screwdriver Set	256
2022	1	Melbourne	14	Square	253
2022	1	Newcastle	24	Drill Bit 7 mm	229
2022	1	Newcastle	8	Hacksaw	194
2022	1	Newcastle	26	Drill Bit 9 mm	192
2022	1	Perth	29	Drill Driver Flat Head	245
2022	1	Perth	1	Hammer	229
2022	1	Perth	16	Socket Set	226
2022	1	Sydney	1	Hammer	260
2022	1	Sydney	6	Paint Roller Kit	247
2022	1	Sydney	5	Tape Measure	237
2022	1	Wagga Wagga	8	Hacksaw	435
2022	1	Wagga Wagga	23	Drill Bit 6 mm	328
2022	1	Wagga Wagga	17	Punch	328
2022	1	Wollongong	21	Drill Bit 4 mm	197
2022	1	Wollongong	16	Socket Set	195
2022	1	Wollongong	5	Tape Measure	193
2022	2	Adelaide	19	Drill Bit 2 mm	170

2022	2	Adelaide	22	Drill Bit 5 mm	169
2022	2	Adelaide	21	Drill Bit 4 mm	155
2022	2	Brisbane	2	Screwdriver Set	191
2022	2	Brisbane	21	Drill Bit 4 mm	183
2022	2	Brisbane	26	Drill Bit 9 mm	175
2022	2	Darwin	18	Garden Hose	212
2022	2	Darwin	22	Drill Bit 5 mm	209
2022	2	Darwin	26	Drill Bit 9 mm	191
2022	2	Hobart	22	Drill Bit 5 mm	196
2022	2	Hobart	3	Axe	170
2022	2	Hobart	17	Punch	162
2022	2	Melbourne	7	Mitre Saw	263
2022	2	Melbourne	26	Drill Bit 9 mm	227
2022	2	Melbourne	27	Drill Bit 10 mm	221
2022	2	Newcastle	14	Square	278
2022	2	Newcastle	19	Drill Bit 2 mm	233
2022	2	Newcastle	18	Garden Hose	228
2022	2	Perth	28	Drill Driver Phillips head	236
2022	2	Perth	10	Cordless Drill Kit	213
2022	2	Perth	21	Drill Bit 4 mm	202
2022	2	Sydney	21	Drill Bit 4 mm	256
2022	2	Sydney	24	Drill Bit 7 mm	231
2022	2	Sydney	16	Socket Set	213
2022	2	Wagga Wagga	22	Drill Bit 5 mm	378
2022	2	Wagga Wagga	10	Cordless Drill Kit	347
2022	2	Wagga Wagga	18	Garden Hose	337
2022	2	Wollongong	23	Drill Bit 6 mm	170
2022	2	Wollongong	19	Drill Bit 2 mm	154
2022	2	Wollongong	5	Tape Measure	152
2022	3	Adelaide	17	Punch	234
2022	3	Adelaide	2	Screwdriver Set	211
2022	3	Adelaide	10	Cordless Drill Kit	211
2022	3	Brisbane	27	Drill Bit 10 mm	199
2022	3	Brisbane	6	Paint Roller Kit	183
2022	3	Brisbane	20	Drill Bit 3 mm	176
2022	3	Darwin	12	Glue	207
2022	3	Darwin	1	Hammer	180
2022	3	Darwin	13	Ruler	171
2022	3	Hobart	22	Drill Bit 5 mm	284
2022	3	Hobart	20	Drill Bit 3 mm	232
2022	3	Hobart	15	Picture Hook	208
2022	3	Melbourne	3	Axe	230
2022	3	Melbourne	19	Drill Bit 2 mm	222

2022	3	Melbourne	8	Hacksaw	221
2022	3	Newcastle	7	Mitre Saw	225
2022	3	Newcastle	28	Drill Driver Phillips head	222
2022	3	Newcastle	4	Box of Nails	221
2022	3	Perth	20	Drill Bit 3 mm	256
2022	3	Perth	1	Hammer	245
2022	3	Perth	11	Grinder	225
2022	3	Sydney	17	Punch	274
2022	3	Sydney	15	Picture Hook	230
2022	3	Sydney	8	Hacksaw	228
2022	3	Wagga Wagga	14	Square	336
2022	3	Wagga Wagga	3	Axe	335
2022	3	Wagga Wagga	8	Hacksaw	311
2022	3	Wollongong	8	Hacksaw	163
2022	3	Wollongong	2	Screwdriver Set	155
2022	3	Wollongong	27	Drill Bit 10 mm	141
2022	4	Adelaide	6	Paint Roller Kit	196
2022	4	Adelaide	30	Drill Driver Hex head	185
2022	4	Adelaide	2	Screwdriver Set	184
2022	4	Brisbane	6	Paint Roller Kit	243
2022	4	Brisbane	30	Drill Driver Hex head	217
2022	4	Brisbane	23	Drill Bit 6 mm	201
2022	4	Darwin	20	Drill Bit 3 mm	222
2022	4	Darwin	3	Axe	216
2022	4	Darwin	25	Drill Bit 8 mm	205
2022	4	Hobart	23	Drill Bit 6 mm	237
2022	4	Hobart	22	Drill Bit 5 mm	197
2022	4	Hobart	29	Drill Driver Flat Head	190
2022	4	Melbourne	9	Box of Screws	260
2022	4	Melbourne	12	Glue	225
2022	4	Melbourne	1	Hammer	222
2022	4	Newcastle	27	Drill Bit 10 mm	225
2022	4	Newcastle	8	Hacksaw	196
2022	4	Newcastle	7	Mitre Saw	195
2022	4	Perth	22	Drill Bit 5 mm	238
2022	4	Perth	16	Socket Set	214
2022	4	Perth	6	Paint Roller Kit	211
2022	4	Sydney	16	Socket Set	235
2022	4	Sydney	13	Ruler	204
2022	4	Sydney	4	Box of Nails	193
2022	4	Wagga Wagga	17	Punch	334
2022	4	Wagga Wagga	29	Drill Driver Flat Head	312
2022	4	Wagga Wagga	19	Drill Bit 2 mm	312

2022	4	Wollongong	22	Drill Bit 5 mm	187
2022	4	Wollongong	19	Drill Bit 2 mm	154
2022	4	Wollongong	10	Cordless Drill Kit	154
2022	5	Adelaide	7	Mitre Saw	212
2022	5	Adelaide	12	Glue	207
2022	5	Adelaide	2	Screwdriver Set	202
2022	5	Brisbane	15	Picture Hook	234
2022	5	Brisbane	7	Mitre Saw	205
2022	5	Brisbane	28	Drill Driver Phillips head	200
2022	5	Darwin	26	Drill Bit 9 mm	282
2022	5	Darwin	28	Drill Driver Phillips head	269
2022	5	Darwin	10	Cordless Drill Kit	241
2022	5	Hobart	1	Hammer	208
2022	5	Hobart	3	Axe	189
2022	5	Hobart	8	Hacksaw	186
2022	5	Melbourne	29	Drill Driver Flat Head	244
2022	5	Melbourne	12	Glue	236
2022	5	Melbourne	8	Hacksaw	234
2022	5	Newcastle	18	Garden Hose	231
2022	5	Newcastle	25	Drill Bit 8 mm	219
2022	5	Newcastle	5	Tape Measure	213
2022	5	Perth	27	Drill Bit 10 mm	220
2022	5	Perth	30	Drill Driver Hex head	202
2022	5	Perth	24	Drill Bit 7 mm	202
2022	5	Sydney	20	Drill Bit 3 mm	284
2022	5	Sydney	13	Ruler	244
2022	5	Sydney	17	Punch	220
2022	5	Wagga Wagga	7	Mitre Saw	329
2022	5	Wagga Wagga	15	Picture Hook	322
2022	5	Wagga Wagga	30	Drill Driver Hex head	321
2022	5	Wollongong	13	Ruler	214
2022	5	Wollongong	16	Socket Set	211
2022	5	Wollongong	14	Square	202
2022	6	Adelaide	13	Ruler	216
2022	6	Adelaide	16	Socket Set	196
2022	6	Adelaide	27	Drill Bit 10 mm	194
2022	6	Brisbane	7	Mitre Saw	226
2022	6	Brisbane	12	Glue	197
2022	6	Brisbane	9	Box of Screws	183
2022	6	Darwin	6	Paint Roller Kit	246
2022	6	Darwin	19	Drill Bit 2 mm	215
2022	6	Darwin	14	Square	213
2022	6	Hobart	28	Drill Driver Phillips head	208

2022	6	Hobart	22	Drill Bit 5 mm	201
2022	6	Hobart	23	Drill Bit 6 mm	190
2022	6	Melbourne	30	Drill Driver Hex head	261
2022	6	Melbourne	9	Box of Screws	253
2022	6	Melbourne	8	Hacksaw	241
2022	6	Newcastle	30	Drill Driver Hex head	234
2022	6	Newcastle	12	Glue	217
2022	6	Newcastle	3	Axe	216
2022	6	Perth	17	Punch	217
2022	6	Perth	29	Drill Driver Flat Head	209
2022	6	Perth	2	Screwdriver Set	205
2022	6	Sydney	11	Grinder	260
2022	6	Sydney	4	Box of Nails	259
2022	6	Sydney	8	Hacksaw	244
2022	6	Wagga Wagga	3	Axe	329
2022	6	Wagga Wagga	7	Mitre Saw	328
2022	6	Wagga Wagga	5	Tape Measure	324
2022	6	Wollongong	23	Drill Bit 6 mm	185
2022	6	Wollongong	12	Glue	178
2022	6	Wollongong	17	Punch	176

## Determining the three most popular items in each store based on the entirety of dataset provided.

To determine the three most popular items in each store based on the entirety of your dataset (without partitioning by month), we used the ROW\_NUMBER() function. This time, partition only by the office location and order by the quantity sold for each item. This SQL script will give you the three most popular items for each store (office location) based on the total quantity sold in the entire dataset.

```

WITH PopularItems AS
(
    SELECT
        [Office Location],
        [Item ID],
        [Item Description],
        SUM([Item Quantity]) AS TotalQuantitySold,
        ROW_NUMBER() OVER (PARTITION BY [Office Location]
                            ORDER BY SUM([Item Quantity]) DESC) AS Rank
    FROM
        [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
    GROUP BY
        [Office Location],
        [Item ID],
        [Item Description]
)

```

```

SELECT
    [Office Location],
    [Item ID],
    [Item Description],
    TotalQuantitySold
FROM
    PopularItems
WHERE
    Rank <= 3
ORDER BY
    [Office Location],
    Rank;

```

Raw output of SQL Script:

The three most popular items in each store based on the entire dataset			
Office Location	Item ID	Item Description	TotalQuantitySold
Adelaide	2	Screwdriver Set	1881
Adelaide	16	Socket Set	1856
Adelaide	25	Drill Bit 8 mm	1846
Brisbane	24	Drill Bit 7 mm	1864
Brisbane	30	Drill Driver Hex head	1808
Brisbane	20	Drill Bit 3 mm	1807
Darwin	10	Cordless Drill Kit	2051
Darwin	27	Drill Bit 10 mm	2042
Darwin	20	Drill Bit 3 mm	2038
Hobart	22	Drill Bit 5 mm	2144
Hobart	18	Garden Hose	1900
Hobart	10	Cordless Drill Kit	1885
Melbourne	8	Hacksaw	2436
Melbourne	22	Drill Bit 5 mm	2384
Melbourne	14	Square	2376
Newcastle	26	Drill Bit 9 mm	2176
Newcastle	13	Ruler	2153
Newcastle	24	Drill Bit 7 mm	2144
Perth	4	Box of Nails	2185
Perth	20	Drill Bit 3 mm	2157
Perth	16	Socket Set	2151
Sydney	5	Tape Measure	2374
Sydney	28	Drill Driver Phillips head	2371
Sydney	7	Mitre Saw	2328
Wagga Wagga	14	Square	3566
Wagga Wagga	21	Drill Bit 4 mm	3478
Wagga Wagga	25	Drill Bit 8 mm	3405
Wollongong	16	Socket Set	1765



Wollongong	8	Hacksaw	1696
Wollongong	5	Tape Measure	1674

## Top 3 items in popularity across all stores.

To identify the top 3 items in popularity across all stores, we aggregate the quantity sold for each item without partitioning by the store location. The script below will provide the top 3 items based on the total quantity sold across all stores.

```
WITH OverallPopularItems AS
(
    SELECT
        [Item ID],
        [Item Description],
        SUM([Item Quantity]) AS TotalQuantitySold,
        ROW_NUMBER() OVER (ORDER BY SUM([Item Quantity]) DESC) AS Rank
    FROM
        [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
    GROUP BY
        [Item ID],
        [Item Description]
)

SELECT
    [Item ID],
    [Item Description],
    TotalQuantitySold
FROM
    OverallPopularItems
WHERE
    Rank <= 3
ORDER BY
    Rank;
```

Raw output of SQL Script:

Top 3 items in popularity across all stores		
Item ID	Item Description	TotalQuantitySold
7	Mitre Saw	20811
22	Drill Bit 5 mm	20598
20	Drill Bit 3 mm	20586

## Determining the three least popular items in each store for each month.

To determine the three least popular items in each store for each month, we use the ROW\_NUMBER() function, but this time we order the items in ascending order based on the quantity sold.

```
WITH MonthlyLeastPopularItems AS
(
    SELECT
        YEAR([Sale Date]) AS Year,
```

```

        MONTH([Sale Date]) AS Month,
        [Office Location],
        [Item ID],
        [Item Description],
        SUM([Item Quantity]) AS TotalQuantitySold,
        ROW_NUMBER() OVER (PARTITION BY YEAR([Sale Date]), MONTH([Sale Date]), [Office
Location]
                                ORDER BY SUM([Item Quantity]) ASC) AS Rank -- Ordering in
ascending order
FROM
    [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY
    YEAR([Sale Date]),
    MONTH([Sale Date]),
    [Office Location],
    [Item ID],
    [Item Description]
)

SELECT
    Year,
    Month,
    [Office Location],
    [Item ID],
    [Item Description],
    TotalQuantitySold
FROM
    MonthlyLeastPopularItems
WHERE
    Rank <= 3
ORDER BY
    Year,
    Month,
    [Office Location],
    Rank;

```

Raw output of SQL Script:

3 least popular items in each store for each month					
Year	Month	Office Location	Item ID	Item Description	TotalQuantitySold
2021	7	Adelaide	1	Hammer	69
2021	7	Adelaide	15	Picture Hook	101
2021	7	Adelaide	11	Grinder	107
2021	7	Brisbane	13	Ruler	62
2021	7	Brisbane	9	Box of Screws	68
2021	7	Brisbane	27	Drill Bit 10 mm	92
2021	7	Darwin	20	Drill Bit 3 mm	86
2021	7	Darwin	13	Ruler	105
2021	7	Darwin	3	Axe	106
2021	7	Hobart	28	Drill Driver Phillips head	111
2021	7	Hobart	14	Square	116
2021	7	Hobart	12	Glue	120

2021	7	Melbourne	23	Drill Bit 6 mm	85
2021	7	Melbourne	26	Drill Bit 9 mm	113
2021	7	Melbourne	5	Tape Measure	127
2021	7	Newcastle	18	Garden Hose	97
2021	7	Newcastle	9	Box of Screws	118
2021	7	Newcastle	14	Square	127
2021	7	Perth	26	Drill Bit 9 mm	126
2021	7	Perth	27	Drill Bit 10 mm	129
2021	7	Perth	3	Axe	139
2021	7	Sydney	26	Drill Bit 9 mm	137
2021	7	Sydney	11	Grinder	155
2021	7	Sydney	23	Drill Bit 6 mm	157
2021	7	Wagga Wagga	13	Ruler	234
2021	7	Wagga Wagga	23	Drill Bit 6 mm	235
2021	7	Wagga Wagga	19	Drill Bit 2 mm	249
2021	7	Wollongong	21	Drill Bit 4 mm	92
2021	7	Wollongong	14	Square	93
2021	7	Wollongong	13	Ruler	105
2021	8	Adelaide	24	Drill Bit 7 mm	68
2021	8	Adelaide	25	Drill Bit 8 mm	86
2021	8	Adelaide	17	Punch	96
2021	8	Brisbane	4	Box of Nails	85
2021	8	Brisbane	13	Ruler	92
2021	8	Brisbane	16	Socket Set	92
2021	8	Darwin	1	Hammer	108
2021	8	Darwin	11	Grinder	108
2021	8	Darwin	24	Drill Bit 7 mm	115
2021	8	Hobart	23	Drill Bit 6 mm	91
2021	8	Hobart	29	Drill Driver Flat Head	92
2021	8	Hobart	15	Picture Hook	97
2021	8	Melbourne	17	Punch	116
2021	8	Melbourne	23	Drill Bit 6 mm	122
2021	8	Melbourne	27	Drill Bit 10 mm	138
2021	8	Newcastle	24	Drill Bit 7 mm	86
2021	8	Newcastle	4	Box of Nails	96
2021	8	Newcastle	19	Drill Bit 2 mm	117
2021	8	Perth	23	Drill Bit 6 mm	114
2021	8	Perth	6	Paint Roller Kit	125
2021	8	Perth	15	Picture Hook	127
2021	8	Sydney	25	Drill Bit 8 mm	129
2021	8	Sydney	29	Drill Driver Flat Head	131
2021	8	Sydney	18	Garden Hose	142
2021	8	Wagga Wagga	10	Cordless Drill Kit	174

2021	8	Wagga Wagga	16	Socket Set	205
2021	8	Wagga Wagga	8	Hacksaw	213
2021	8	Wollongong	13	Ruler	80
2021	8	Wollongong	7	Mitre Saw	102
2021	8	Wollongong	12	Glue	105
2021	9	Adelaide	18	Garden Hose	68
2021	9	Adelaide	5	Tape Measure	81
2021	9	Adelaide	12	Glue	93
2021	9	Brisbane	25	Drill Bit 8 mm	71
2021	9	Brisbane	19	Drill Bit 2 mm	75
2021	9	Brisbane	28	Drill Driver Phillips head	75
2021	9	Darwin	29	Drill Driver Flat Head	69
2021	9	Darwin	4	Box of Nails	87
2021	9	Darwin	9	Box of Screws	96
2021	9	Hobart	5	Tape Measure	79
2021	9	Hobart	21	Drill Bit 4 mm	83
2021	9	Hobart	11	Grinder	91
2021	9	Melbourne	12	Glue	115
2021	9	Melbourne	30	Drill Driver Hex head	115
2021	9	Melbourne	13	Ruler	144
2021	9	Newcastle	18	Garden Hose	122
2021	9	Newcastle	7	Mitre Saw	134
2021	9	Newcastle	11	Grinder	135
2021	9	Perth	12	Glue	83
2021	9	Perth	28	Drill Driver Phillips head	104
2021	9	Perth	3	Axe	106
2021	9	Sydney	21	Drill Bit 4 mm	89
2021	9	Sydney	27	Drill Bit 10 mm	115
2021	9	Sydney	8	Hacksaw	120
2021	9	Wagga Wagga	19	Drill Bit 2 mm	166
2021	9	Wagga Wagga	15	Picture Hook	185
2021	9	Wagga Wagga	5	Tape Measure	188
2021	9	Wollongong	10	Cordless Drill Kit	92
2021	9	Wollongong	14	Square	108
2021	9	Wollongong	11	Grinder	109
2021	10	Adelaide	4	Box of Nails	110
2021	10	Adelaide	29	Drill Driver Flat Head	120
2021	10	Adelaide	13	Ruler	133
2021	10	Brisbane	2	Screwdriver Set	79
2021	10	Brisbane	14	Square	90
2021	10	Brisbane	11	Grinder	95
2021	10	Darwin	1	Hammer	94
2021	10	Darwin	25	Drill Bit 8 mm	106

2021	10	Darwin	2	Screwdriver Set	110
2021	10	Hobart	13	Ruler	98
2021	10	Hobart	1	Hammer	103
2021	10	Hobart	26	Drill Bit 9 mm	106
2021	10	Melbourne	20	Drill Bit 3 mm	100
2021	10	Melbourne	10	Cordless Drill Kit	110
2021	10	Melbourne	2	Screwdriver Set	112
2021	10	Newcastle	23	Drill Bit 6 mm	117
2021	10	Newcastle	2	Screwdriver Set	118
2021	10	Newcastle	17	Punch	121
2021	10	Perth	23	Drill Bit 6 mm	128
2021	10	Perth	22	Drill Bit 5 mm	131
2021	10	Perth	28	Drill Driver Phillips head	139
2021	10	Sydney	22	Drill Bit 5 mm	129
2021	10	Sydney	16	Socket Set	131
2021	10	Sydney	15	Picture Hook	139
2021	10	Wagga Wagga	5	Tape Measure	169
2021	10	Wagga Wagga	4	Box of Nails	173
2021	10	Wagga Wagga	23	Drill Bit 6 mm	212
2021	10	Wollongong	1	Hammer	67
2021	10	Wollongong	10	Cordless Drill Kit	67
2021	10	Wollongong	27	Drill Bit 10 mm	71
2021	11	Adelaide	14	Square	92
2021	11	Adelaide	12	Glue	98
2021	11	Adelaide	23	Drill Bit 6 mm	114
2021	11	Brisbane	16	Socket Set	85
2021	11	Brisbane	15	Picture Hook	98
2021	11	Brisbane	23	Drill Bit 6 mm	99
2021	11	Darwin	6	Paint Roller Kit	96
2021	11	Darwin	29	Drill Driver Flat Head	99
2021	11	Darwin	14	Square	116
2021	11	Hobart	19	Drill Bit 2 mm	98
2021	11	Hobart	27	Drill Bit 10 mm	107
2021	11	Hobart	9	Box of Screws	109
2021	11	Melbourne	10	Cordless Drill Kit	131
2021	11	Melbourne	4	Box of Nails	141
2021	11	Melbourne	12	Glue	142
2021	11	Newcastle	14	Square	105
2021	11	Newcastle	19	Drill Bit 2 mm	109
2021	11	Newcastle	30	Drill Driver Hex head	112
2021	11	Perth	18	Garden Hose	94
2021	11	Perth	14	Square	113
2021	11	Perth	7	Mitre Saw	113

2021	11	Sydney	27	Drill Bit 10 mm	134
2021	11	Sydney	9	Box of Screws	135
2021	11	Sydney	19	Drill Bit 2 mm	143
2021	11	Wagga Wagga	15	Picture Hook	196
2021	11	Wagga Wagga	22	Drill Bit 5 mm	219
2021	11	Wagga Wagga	27	Drill Bit 10 mm	225
2021	11	Wollongong	7	Mitre Saw	66
2021	11	Wollongong	9	Box of Screws	70
2021	11	Wollongong	4	Box of Nails	97
2021	12	Adelaide	18	Garden Hose	115
2021	12	Adelaide	3	Axe	120
2021	12	Adelaide	20	Drill Bit 3 mm	122
2021	12	Brisbane	22	Drill Bit 5 mm	90
2021	12	Brisbane	4	Box of Nails	100
2021	12	Brisbane	17	Punch	103
2021	12	Darwin	18	Garden Hose	109
2021	12	Darwin	22	Drill Bit 5 mm	112
2021	12	Darwin	30	Drill Driver Hex head	122
2021	12	Hobart	14	Square	96
2021	12	Hobart	4	Box of Nails	99
2021	12	Hobart	26	Drill Bit 9 mm	107
2021	12	Melbourne	26	Drill Bit 9 mm	118
2021	12	Melbourne	6	Paint Roller Kit	133
2021	12	Melbourne	4	Box of Nails	148
2021	12	Newcastle	28	Drill Driver Phillips head	75
2021	12	Newcastle	22	Drill Bit 5 mm	103
2021	12	Newcastle	4	Box of Nails	108
2021	12	Perth	14	Square	85
2021	12	Perth	8	Hacksaw	108
2021	12	Perth	22	Drill Bit 5 mm	111
2021	12	Sydney	3	Axe	113
2021	12	Sydney	23	Drill Bit 6 mm	115
2021	12	Sydney	6	Paint Roller Kit	124
2021	12	Wagga Wagga	12	Glue	196
2021	12	Wagga Wagga	9	Box of Screws	196
2021	12	Wagga Wagga	13	Ruler	214
2021	12	Wollongong	23	Drill Bit 6 mm	86
2021	12	Wollongong	27	Drill Bit 10 mm	88
2021	12	Wollongong	4	Box of Nails	95
2022	1	Adelaide	28	Drill Driver Phillips head	62
2022	1	Adelaide	24	Drill Bit 7 mm	78
2022	1	Adelaide	12	Glue	91
2022	1	Brisbane	26	Drill Bit 9 mm	97

2022	1	Brisbane	2	Screwdriver Set	102
2022	1	Brisbane	7	Mitre Saw	108
2022	1	Darwin	29	Drill Driver Flat Head	87
2022	1	Darwin	15	Picture Hook	106
2022	1	Darwin	9	Box of Screws	106
2022	1	Hobart	17	Punch	90
2022	1	Hobart	14	Square	107
2022	1	Hobart	26	Drill Bit 9 mm	109
2022	1	Melbourne	30	Drill Driver Hex head	135
2022	1	Melbourne	11	Grinder	136
2022	1	Melbourne	29	Drill Driver Flat Head	142
2022	1	Newcastle	14	Square	78
2022	1	Newcastle	25	Drill Bit 8 mm	81
2022	1	Newcastle	4	Box of Nails	100
2022	1	Perth	18	Garden Hose	118
2022	1	Perth	3	Axe	121
2022	1	Perth	13	Ruler	121
2022	1	Sydney	22	Drill Bit 5 mm	93
2022	1	Sydney	21	Drill Bit 4 mm	132
2022	1	Sydney	27	Drill Bit 10 mm	134
2022	1	Wagga Wagga	4	Box of Nails	202
2022	1	Wagga Wagga	2	Screwdriver Set	205
2022	1	Wagga Wagga	28	Drill Driver Phillips head	212
2022	1	Wollongong	3	Axe	83
2022	1	Wollongong	17	Punch	85
2022	1	Wollongong	4	Box of Nails	96
2022	2	Adelaide	14	Square	67
2022	2	Adelaide	28	Drill Driver Phillips head	68
2022	2	Adelaide	9	Box of Screws	90
2022	2	Brisbane	28	Drill Driver Phillips head	82
2022	2	Brisbane	3	Axe	91
2022	2	Brisbane	18	Garden Hose	96
2022	2	Darwin	8	Hacksaw	89
2022	2	Darwin	30	Drill Driver Hex head	98
2022	2	Darwin	12	Glue	104
2022	2	Hobart	20	Drill Bit 3 mm	69
2022	2	Hobart	5	Tape Measure	74
2022	2	Hobart	12	Glue	84
2022	2	Melbourne	17	Punch	107
2022	2	Melbourne	5	Tape Measure	109
2022	2	Melbourne	9	Box of Screws	119
2022	2	Newcastle	27	Drill Bit 10 mm	130
2022	2	Newcastle	29	Drill Driver Flat Head	133

2022	2	Newcastle	22	Drill Bit 5 mm	138
2022	2	Perth	29	Drill Driver Flat Head	83
2022	2	Perth	23	Drill Bit 6 mm	98
2022	2	Perth	19	Drill Bit 2 mm	103
2022	2	Sydney	28	Drill Driver Phillips head	98
2022	2	Sydney	5	Tape Measure	112
2022	2	Sydney	2	Screwdriver Set	124
2022	2	Wagga Wagga	7	Mitre Saw	167
2022	2	Wagga Wagga	16	Socket Set	181
2022	2	Wagga Wagga	26	Drill Bit 9 mm	202
2022	2	Wollongong	16	Socket Set	53
2022	2	Wollongong	10	Cordless Drill Kit	53
2022	2	Wollongong	14	Square	72
2022	3	Adelaide	26	Drill Bit 9 mm	102
2022	3	Adelaide	3	Axe	110
2022	3	Adelaide	20	Drill Bit 3 mm	119
2022	3	Brisbane	21	Drill Bit 4 mm	77
2022	3	Brisbane	19	Drill Bit 2 mm	103
2022	3	Brisbane	1	Hammer	106
2022	3	Darwin	18	Garden Hose	92
2022	3	Darwin	8	Hacksaw	94
2022	3	Darwin	30	Drill Driver Hex head	107
2022	3	Hobart	7	Mitre Saw	99
2022	3	Hobart	29	Drill Driver Flat Head	100
2022	3	Hobart	6	Paint Roller Kit	105
2022	3	Melbourne	28	Drill Driver Phillips head	96
2022	3	Melbourne	30	Drill Driver Hex head	111
2022	3	Melbourne	29	Drill Driver Flat Head	115
2022	3	Newcastle	11	Grinder	106
2022	3	Newcastle	8	Hacksaw	117
2022	3	Newcastle	18	Garden Hose	119
2022	3	Perth	23	Drill Bit 6 mm	138
2022	3	Perth	26	Drill Bit 9 mm	140
2022	3	Perth	15	Picture Hook	140
2022	3	Sydney	21	Drill Bit 4 mm	137
2022	3	Sydney	24	Drill Bit 7 mm	146
2022	3	Sydney	9	Box of Screws	146
2022	3	Wagga Wagga	18	Garden Hose	217
2022	3	Wagga Wagga	25	Drill Bit 8 mm	222
2022	3	Wagga Wagga	6	Paint Roller Kit	224
2022	3	Wollongong	29	Drill Driver Flat Head	35
2022	3	Wollongong	24	Drill Bit 7 mm	65
2022	3	Wollongong	13	Ruler	74



2022	4	Adelaide	26	Drill Bit 9 mm	67
2022	4	Adelaide	7	Mitre Saw	106
2022	4	Adelaide	19	Drill Bit 2 mm	108
2022	4	Brisbane	10	Cordless Drill Kit	77
2022	4	Brisbane	14	Square	100
2022	4	Brisbane	5	Tape Measure	106
2022	4	Darwin	2	Screwdriver Set	101
2022	4	Darwin	13	Ruler	108
2022	4	Darwin	19	Drill Bit 2 mm	108
2022	4	Hobart	10	Cordless Drill Kit	88
2022	4	Hobart	17	Punch	104
2022	4	Hobart	19	Drill Bit 2 mm	104
2022	4	Melbourne	11	Grinder	121
2022	4	Melbourne	24	Drill Bit 7 mm	122
2022	4	Melbourne	27	Drill Bit 10 mm	134
2022	4	Newcastle	3	Axe	105
2022	4	Newcastle	6	Paint Roller Kit	118
2022	4	Newcastle	22	Drill Bit 5 mm	120
2022	4	Perth	9	Box of Screws	94
2022	4	Perth	27	Drill Bit 10 mm	99
2022	4	Perth	19	Drill Bit 2 mm	114
2022	4	Sydney	27	Drill Bit 10 mm	90
2022	4	Sydney	2	Screwdriver Set	106
2022	4	Sydney	28	Drill Driver Phillips head	118
2022	4	Wagga Wagga	8	Hacksaw	154
2022	4	Wagga Wagga	27	Drill Bit 10 mm	207
2022	4	Wagga Wagga	21	Drill Bit 4 mm	212
2022	4	Wollongong	21	Drill Bit 4 mm	63
2022	4	Wollongong	17	Punch	67
2022	4	Wollongong	29	Drill Driver Flat Head	67
2022	5	Adelaide	19	Drill Bit 2 mm	112
2022	5	Adelaide	15	Picture Hook	117
2022	5	Adelaide	29	Drill Driver Flat Head	123
2022	5	Brisbane	25	Drill Bit 8 mm	74
2022	5	Brisbane	16	Socket Set	94
2022	5	Brisbane	21	Drill Bit 4 mm	101
2022	5	Darwin	1	Hammer	110
2022	5	Darwin	5	Tape Measure	124
2022	5	Darwin	23	Drill Bit 6 mm	126
2022	5	Hobart	2	Screwdriver Set	86
2022	5	Hobart	27	Drill Bit 10 mm	90
2022	5	Hobart	24	Drill Bit 7 mm	94
2022	5	Melbourne	28	Drill Driver Phillips head	108

2022	5	Melbourne	16	Socket Set	123
2022	5	Melbourne	18	Garden Hose	133
2022	5	Newcastle	17	Punch	110
2022	5	Newcastle	7	Mitre Saw	126
2022	5	Newcastle	20	Drill Bit 3 mm	147
2022	5	Perth	23	Drill Bit 6 mm	101
2022	5	Perth	25	Drill Bit 8 mm	110
2022	5	Perth	21	Drill Bit 4 mm	115
2022	5	Sydney	3	Axe	110
2022	5	Sydney	22	Drill Bit 5 mm	141
2022	5	Sydney	8	Hacksaw	141
2022	5	Wagga Wagga	23	Drill Bit 6 mm	200
2022	5	Wagga Wagga	10	Cordless Drill Kit	215
2022	5	Wagga Wagga	1	Hammer	223
2022	5	Wollongong	24	Drill Bit 7 mm	79
2022	5	Wollongong	19	Drill Bit 2 mm	80
2022	5	Wollongong	22	Drill Bit 5 mm	100
2022	6	Adelaide	10	Cordless Drill Kit	75
2022	6	Adelaide	1	Hammer	76
2022	6	Adelaide	17	Punch	79
2022	6	Brisbane	15	Picture Hook	78
2022	6	Brisbane	2	Screwdriver Set	86
2022	6	Brisbane	17	Punch	103
2022	6	Darwin	1	Hammer	90
2022	6	Darwin	26	Drill Bit 9 mm	122
2022	6	Darwin	3	Axe	130
2022	6	Hobart	8	Hacksaw	76
2022	6	Hobart	20	Drill Bit 3 mm	83
2022	6	Hobart	15	Picture Hook	83
2022	6	Melbourne	5	Tape Measure	111
2022	6	Melbourne	18	Garden Hose	134
2022	6	Melbourne	25	Drill Bit 8 mm	141
2022	6	Newcastle	15	Picture Hook	112
2022	6	Newcastle	5	Tape Measure	113
2022	6	Newcastle	29	Drill Driver Flat Head	118
2022	6	Perth	27	Drill Bit 10 mm	97
2022	6	Perth	24	Drill Bit 7 mm	101
2022	6	Perth	5	Tape Measure	110
2022	6	Sydney	18	Garden Hose	92
2022	6	Sydney	23	Drill Bit 6 mm	129
2022	6	Sydney	21	Drill Bit 4 mm	136
2022	6	Wagga Wagga	6	Paint Roller Kit	198
2022	6	Wagga Wagga	16	Socket Set	198

2022	6	Wagga Wagga	24	Drill Bit 7 mm	203
2022	6	Wollongong	20	Drill Bit 3 mm	70
2022	6	Wollongong	6	Paint Roller Kit	79
2022	6	Wollongong	18	Garden Hose	80

## Determining the three least popular items in each store based on the entirety of dataset provided.

To determine the three least popular items in each store based on the entirety of our dataset, we ordered the results in ascending order based on the quantity sold. This script will provide you with the three least popular items for each store (office location) based on the total quantity sold in the entire dataset.

```
WITH OverallLeastPopularItems AS
(
    SELECT
        [Office Location],
        [Item ID],
        [Item Description],
        SUM([Item Quantity]) AS TotalQuantitySold,
        ROW_NUMBER() OVER (PARTITION BY [Office Location]
                            ORDER BY SUM([Item Quantity]) ASC) AS Rank -- Ordering in
ascending order
    FROM
        [EBUS3030_assignment_2].[dbo].[Assignment 2 Data$']
    GROUP BY
        [Office Location],
        [Item ID],
        [Item Description]
)

SELECT
    [Office Location],
    [Item ID],
    [Item Description],
    TotalQuantitySold
FROM
    OverallLeastPopularItems
WHERE
    Rank <= 3
ORDER BY
    [Office Location],
    Rank;
```

Raw output of SQL Script:

3 least popular items in each store based on the entirety of dataset provided			
Office Location	Item ID	Item Description	TotalQuantitySold
Adelaide	29	Drill Driver Flat Head	1537
Adelaide	20	Drill Bit 3 mm	1562

Adelaide	17	Punch	1573
Brisbane	25	Drill Bit 8 mm	1397
Brisbane	4	Box of Nails	1471
Brisbane	2	Screwdriver Set	1494
Darwin	1	Hammer	1563
Darwin	8	Hacksaw	1663
Darwin	6	Paint Roller Kit	1680
Hobart	5	Tape Measure	1465
Hobart	8	Hacksaw	1500
Hobart	27	Drill Bit 10 mm	1561
Melbourne	5	Tape Measure	1939
Melbourne	11	Grinder	1962
Melbourne	18	Garden Hose	1980
Newcastle	11	Grinder	1756
Newcastle	2	Screwdriver Set	1765
Newcastle	17	Punch	1866
Perth	23	Drill Bit 6 mm	1767
Perth	13	Ruler	1810
Perth	14	Square	1829
Sydney	27	Drill Bit 10 mm	1947
Sydney	9	Box of Screws	1966
Sydney	2	Screwdriver Set	2027
Wagga Wagga	16	Socket Set	2945
Wagga Wagga	23	Drill Bit 6 mm	3001
Wagga Wagga	28	Drill Driver Phillips head	3010
Wollongong	14	Square	1383
Wollongong	17	Punch	1422
Wollongong	24	Drill Bit 7 mm	1424

To find the top 3 least popular items across all stores based on the entirety of your dataset.

To find the top 3 least popular items across all stores based on the entirety of your dataset, we aggregate the item quantities without partitioning by the store location and ordered them in ascending order. This script will give you the top 3 least popular items based on the total quantity sold across all stores in the entire dataset.

```
WITH OverallLeastPopularItems AS
(
  SELECT
    [Item ID],
    [Item Description],
    SUM([Item Quantity]) AS TotalQuantitySold,
```

```

        ROW_NUMBER() OVER (ORDER BY SUM([Item Quantity]) ASC) AS Rank -- Ordering in
ascending order
    FROM
        [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
    GROUP BY
        [Item ID],
        [Item Description]
)

SELECT
    [Item ID],
    [Item Description],
    TotalQuantitySold
FROM
    OverallLeastPopularItems
WHERE
    Rank <= 3
ORDER BY
    Rank;

```

Raw output of SQL Script:

Top 3 least popular items across all stores		
Item ID	Item Description	TotalQuantitySold
23	Drill Bit 6 mm	19481
13	Ruler	19613
2	Screwdriver Set	19741

# Trend Analysis

Bits and Bobs stated an interest in trend analysis. Trend analysis was performed by calculating means in relation to sales for differing time frames.

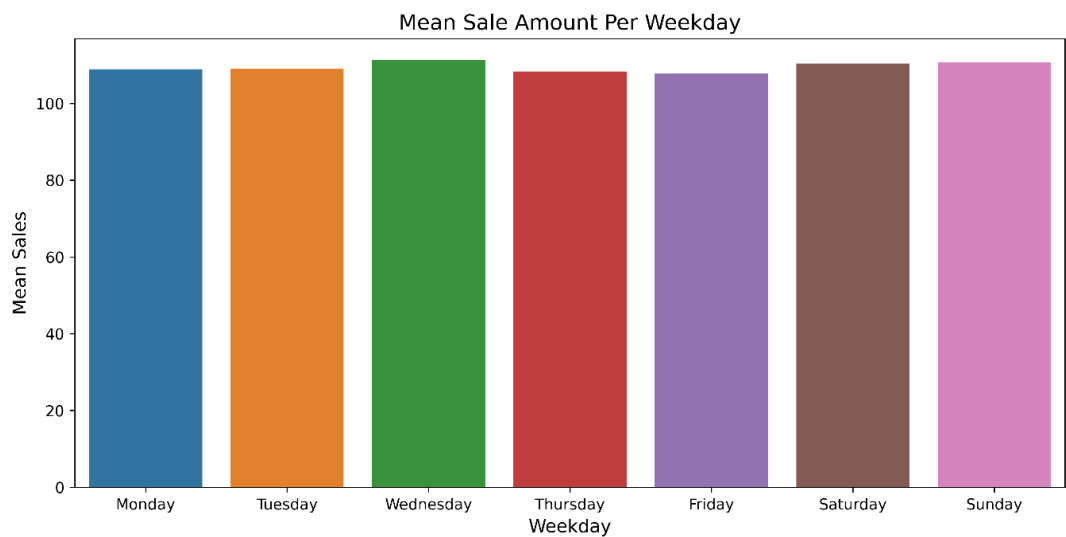


Figure 3: Mean sale amount per weekday across all Bits and Bobs branches

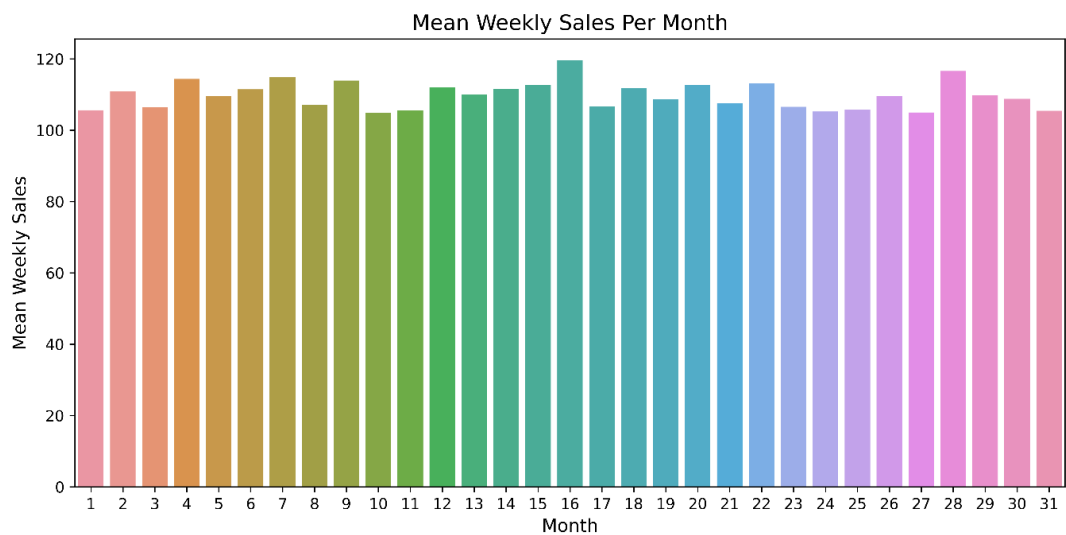
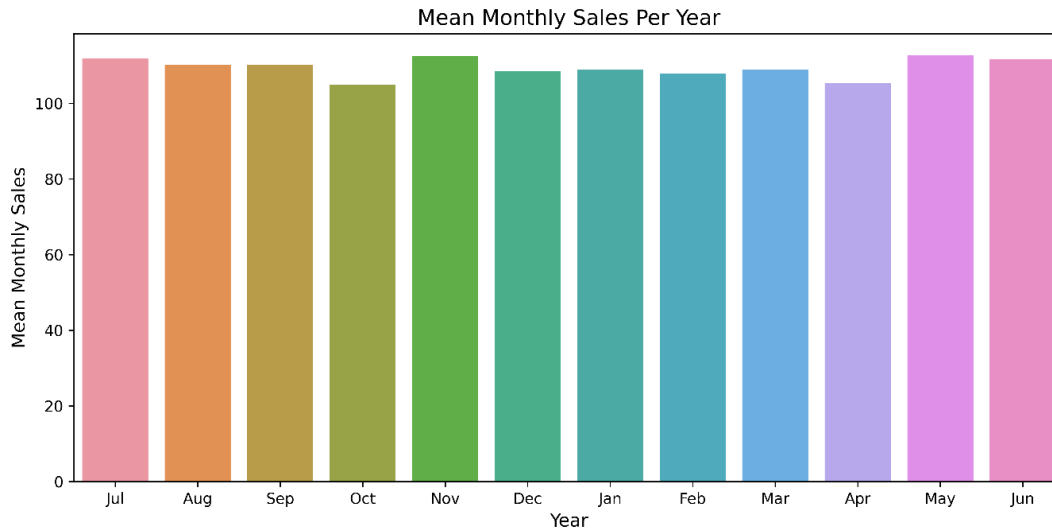


Figure 4: Mean sales per month in day across all Bits and Bobs branches



*Figure 5: Mean sales per month across all Bits and Bobs branches*

## Predictive Analytics

A neural network was designed for sales forecasting of each Bitts and Bibs branch. The neural network was built using Keras. Keras is a neural network framework built on tensorflow and developed by Google.

## Data and Preprocessing

A neural network uses features from data sets to predict one or several output variables. In this case the output variable was the total monthly sale amount. Input features were chosen based on several factors. In a neural network, the usefulness of the output is directly related to the quality of the inputted data and its features. Hence, feature selection was employed to prepare the Bitts and Bobs' data for model training. Feature selection consisted of removing highly correlated features, removing unnecessary features and adding useful features.

## Correlation

Highly correlated features have been shown to impede performance of neural networks. By calculating pearson correlation between variables a correlation heat map was created.

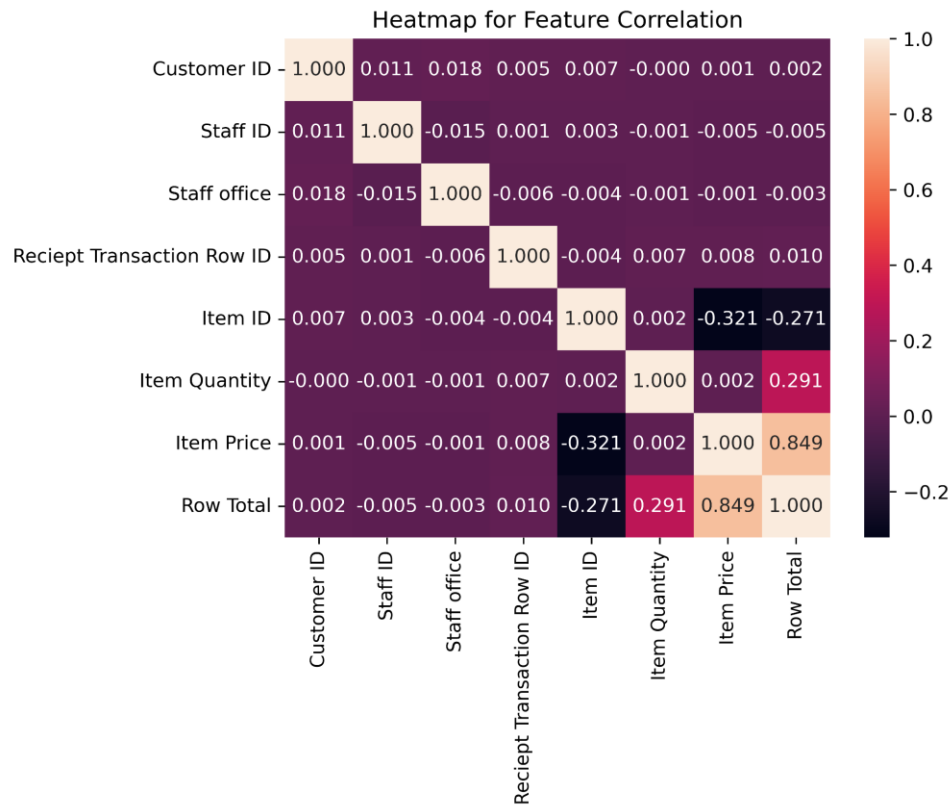


Figure 6: Correlation between features of in Bits and Bobs sale data.

Correlation above 0.7 is considered high correlation. In the above heatmap, row total and item price are the only two features exhibiting high correlation. Therefore, item price was removed from the data set.

The correlation was created and plotted using the python packages pandas, matplotlib and seaborn.

```
corr_df = df.copy()
correlation = corr_df.drop(columns = ["Sale Date", "Staff First Name", "Staff Surname", "Customer First Name", "Customer Surname", "Receipt Id", "Office Location", "Item Description"])

pearson = correlation.corr(method="pearson")

plt.figure()
plt.title("Heatmap for Feature Correlation", fontsize=12)
sns.heatmap(pearson, annot=True, fmt = ".3f")
plt.show()
```

The variable correlation in `correlation.corr(method="pearson")` is a copy of the Bits and Bob data set, with all qualitative features removed.



## Removing features

Unnecessary features are features which do not contribute relevant information to the output. In the provided data set, some features were assumed to be uncontributory. These features were: staff and customer Identity, receipt number, item description and id, and office location.

In a real world sense, the staff employed during a month can affect sales. In fact it is evident that some staff members would perform better than others. However, the data was aggregated per month to fit the output variable. The aggregation removed the staff information per sale. Likewise, the item information is lost during aggregation and is hence removed from the feature set. Moreover, since the model is designed to predict into the future, the employed staff each month or the items sold is not available.

## Adding features

The resulting feature set after feature removal consisted of:

- Month
- Staff office
- Monthly Sale

The three features were not sufficient in predicting a monthly sale value. In testing, the model could predict the monthly sales of a test month with an average error of 97%.

To improve the accuracy of the model, new features were added to the data set. These features were:

- **Holiday**: does the predicted month have a public holiday?
- **Last Month Holiday**: did the previous month have a public holiday?
- **Last Month Total Sale**: total sale amount for previous month

These features were chosen as they provide useful information to the model and can be projected into the future.

## Model Design

### Model architecture

The neural network was constructed with one input layer, one output layer and one hidden layer. When designing a neural network it is generally suggested to introduce the simplest model possible, and increase complexity with need. Using keras, the syntax for creating a a neural network with such an architecture is:

```
model = Sequential()  
model.add(Dense(nr_of_input_channels))  
model.add(Dense(nr_of_hidden_channels, activation='relu'))
```

```
model.add(Dense(nr_of_output_channels))
```

*nr\_of\_input\_channels* was set to 4 (number of features in feature set), and *nr\_of\_output\_channels* was set to 1 (predicted monthly value). To start with, *nr\_of\_hidden\_channels* was set to 3. It is generally good practice to initiate a neural network model with a number of neurons for the hidden layers in between the number of input and output channels. ReLU was chosen as the activation function.

## Hyperparameters

Hyperparameters was set in conjunction with validation (outlined in the following section). The final model was trained using a learning rate of 0.1 and a batch size of 4 for 5000 epochs. Mean absolute error was chosen as loss function. The hyperparameters of the model architecture were tuned using the package Keras Tuner. KerasTuner is a Keras framework which adds functionality to simplify the testing and definition of a network architecture. With KerasTuner, number of layers and their individual number of neurons were tested.

## Validation

K-fold cross validation was used to validate the model on the provided data set. K-fold cross validation works by iteratively training and testing the accuracy of a model on different sections of a data set.

```
N = 10
```

```
kf = KFold(n_splits=N)
```

```
MAE = 0
```

```
for i, (train_index, test_index) in enumerate(kf.split(X)):
```

```
    model.fit(X.iloc[train_index], Y.iloc[train_index], epochs=5000, batch_size=4, verbose=0)
```

```
    loss, mae = model.evaluate(X.iloc[test_index], Y.iloc[test_index])
```

```
    MAE += mae
```

```
MAE /= N
```

```
Accuracy = MAE / Y.mean()
```

In the above code, the mean absolute error is extracted and summed for each fold of the k-fold cross validation. The value is then averaged by division of the number of folds. Finally the relative accuracy is calculated as the mean absolute error divided by the mean of the true values. K-fold cross validation was performed on each branch of the Bits and Bobs corporation.

K-fold cross validation was chosen as a method of evaluation because the provided data set contained one year of data. With the relatively small data set, K-fold cross validation inflated the ability to test the model on unseen data, while maximizing training data.

Validation was executed with several version of the model. The impact of features and the network's architecture was tested by varying the model's hyperparameters. Mean absolute error was chosen for accuracy as it is less sensitive to outlier values compared to mean squared error.

## Accuracy

The neural network model was able to predict the monthly sale amount of the last month with an absolute error of 7%.

The neural network was able to predict the monthly sale amount during a k-fold cross validation with an average mean absolute error of 6%

## Sales Forecasts

The model was designed to predict a monthly sale amount given the features from the current and previous month. In order to predict the coming year's sales, the model was repetitively feeded its previous predictions. The model was employed to predict the sales of each Bits and Bobs branch for the following 12 months. Note that the following 12 months corresponds to the months following the last month of the data set. Below is each branch and their predicted sales. The results are order by alphabetical branch location.

## Adelaide Branch

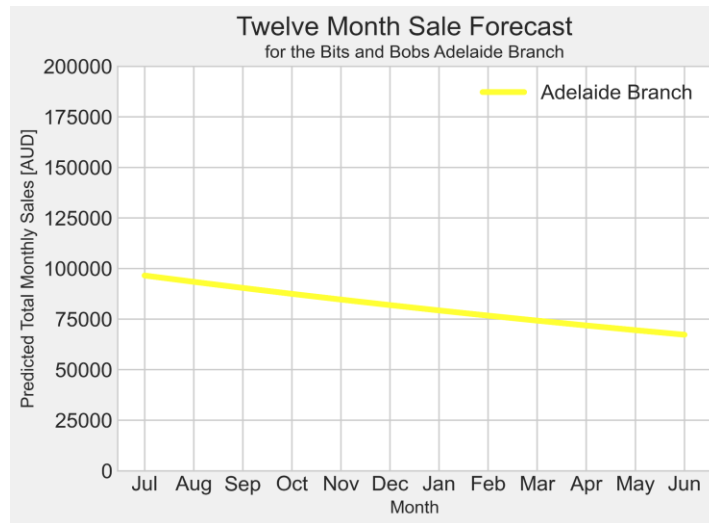


Figure 7: Twelve month sales forecast from July 2022 til June 2023 for Bits and Bobs' Adelaide branch. Y-axis shows monthly estimated sales in AUD, and the x-axis indicates the month.

## Brisbane Branch



Figure 8: Twelve month sales forecast from July 2022 til June 2023 for Bits and Bobs' Brisbane branch. Y-axis shows monthly estimated sales in AUD, and the x-axis indicates the month.

## Darwin Branch

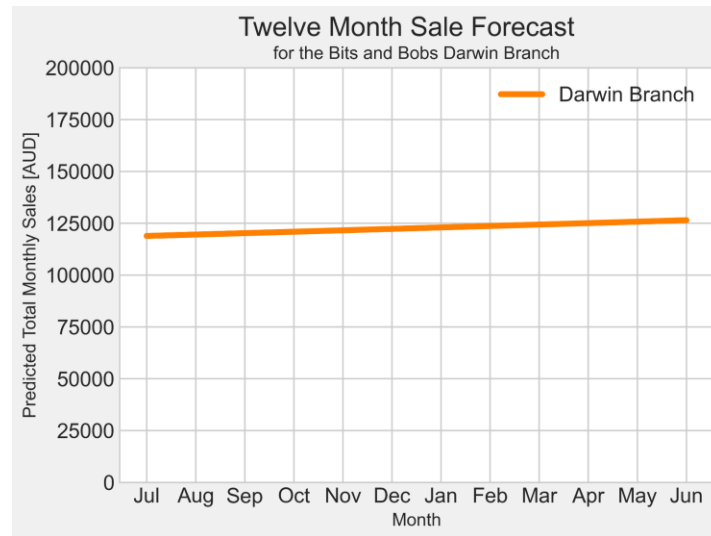


Figure 9: Twelve month sales forecast from July 2022 til June 2023 for Bits and Bobs' Darwin branch. Y-axis shows monthly estimated sales in AUD, and the x-axis indicates the month.

## Hobart Branch

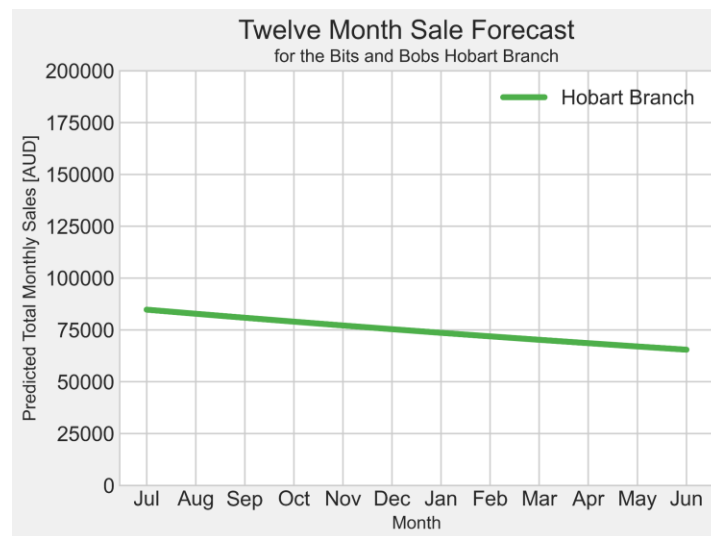


Figure 10: Twelve month sales forecast from July 2022 til June 2023 for Bits and Bobs' Hobart branch. Y-axis shows monthly estimated sales in AUD, and the x-axis indicates the month.

## Melbourne Branch



Figure 11: Twelve month sales forecast from July 2022 til June 2023 for Bits and Bobs' Melbourne branch. Y-axis shows monthly estimated sales in AUD, and the x-axis indicates the month.

## Newcastle Branch

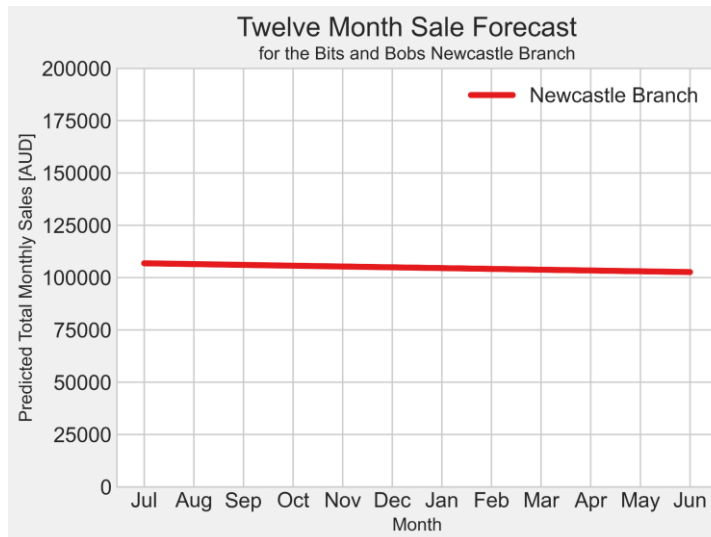


Figure 12: Twelve month sales forecast from July 2022 til June 2023 for Bits and Bobs' Newcastle branch. Y-axis shows monthly estimated sales in AUD, and the x-axis indicates the month.

## Perth Branch



Figure 13: Twelve month sales forecast from July 2022 til June 2023 for Bits and Bobs' Perth branch. Y-axis shows monthly estimated sales in AUD, and the x-axis indicates the month.

## Sydney Branch

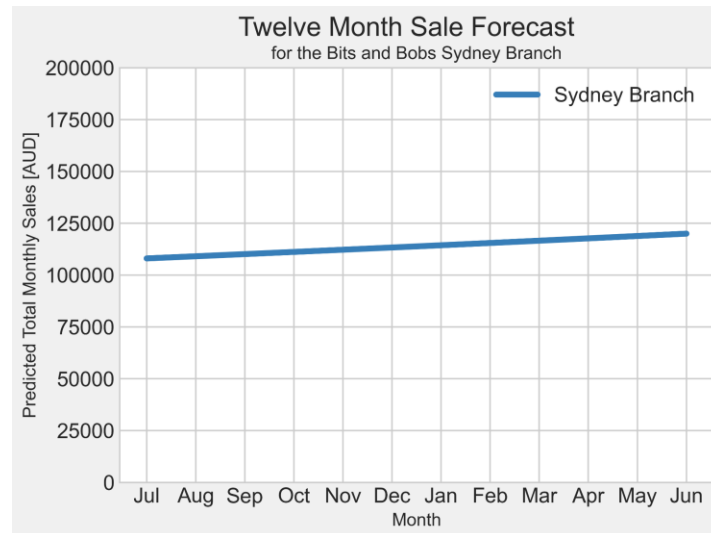


Figure 14: Twelve month sales forecast from July 2022 til June 2023 for Bits and Bobs' Sydney branch. Y-axis shows monthly estimated sales in AUD, and the x-axis indicates the month.

## Wagga Wagga Branch



Figure 15: Twelve month sales forecast from July 2022 til June 2023 for Bits and Bobs' Wagga Wagga branch. Y-axis shows monthly estimated sales in AUD, and the x-axis indicates the month.

## Wollongong Branch

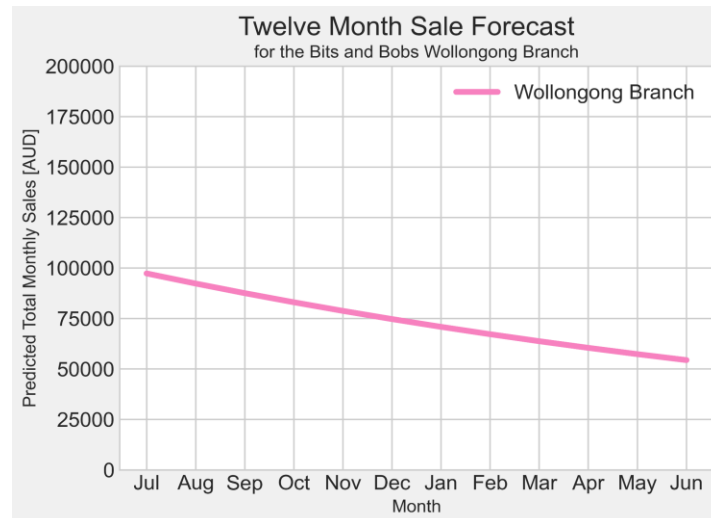


Figure 16: Twelve month sales forecast from July 2022 til June 2023 for Bits and Bobs' Wollongong branch. Y-axis shows monthly estimated sales in AUD, and the x-axis indicates the month.

## Comments on Reliability

In regards to the predictive analytics, the reliability of the predictions can increase if more data is contributed in the future. With a larger data set, the neural network would be able to find more complex sale patterns without overfitting to the training data. Hopefully, more data would then increase the reliability and usefulness of the predicted sales. A model of this type is never correct, but can be useful. Thus, increasing reliability increases usefulness for Bits and Bobs. The current predictions generally



follow the trajectory of the previous fiscal year. In retrospect a linear regression model might have been advantageous, possibly producing similar results with less computational cost. However, for future predictions a neural network can prove beneficial, as it is able to find more complex relationships.

# Business Recommendation

## Office Closure

It is our expert opinion based of the base analysis and predictive analysis of the company that one store must be closed to assist in projecting BitsAndBobs to become profitable. Based of our analysis we can confidently say that Wollongong is your worst performing store and it is our recommendation that this store is closed. Wollongong currently has the worst total revenue generated in the past 12 months of only \$938 812.3 which is predicted to decline a further \$43 000 over the next 12 months. Net profits predicted to decline 44% within the year is extremely poor which is why we support the closure of this branch.

It is important to mention that Wollongong is the smallest out of the 10 branches with only 15 staff members. However, based off the statistics of both current and predicted future of Wollongong, it doesn't take away the facts about its performance and is undoubtedly the worst performing store amongst the group.

## Best and Worst performing Items

BitsAndBob's item performance was thoroughly analysed and it is our expert opinion that no item should be removed or replaced. Based off our analysis, the margin between best and worst performing items is only 1070 units which isn't drastic enough for change to be necessary. To identify your best and worst performing items, your top 3 items are the mitre saw with 20811 units, Drill Bit 5mm with 20598 units, and Drill Bit 3mm with 20568 units sold. The worst performing items include the Drill Bit 6mm with 19481 units, Ruler with 19613 units and the screwdriver set with 19741 units sold.

To further increase sales, it is important to regularly apply discounts to the best and worst performing items as this creates further incentives to buy popular items and also highlights less popular items to encourage purchases. There is also potential for bundling items, for example 2 out of the top 3 best performing items are drill bits, however your worst performing item is also a size of drill bit. Bundling drill bits into a discounted package will incentivize the purchase of less desirable products.

Also identified is the best and worst performing items for each branch. Again, it is important to recognise that the margin between top and bottom performing items isn't major and that items shouldn't be removed or replaced. However, this information is ideal for applying discounts and sales for store specific items.

It is also noticed that BitsAndBobs only has 30 different types of items, this could be further increased to venture into different markets which would increase customer attention, store traffic and sales.

## Visualizing the point system

The idea of the new point system is a much more effective approach than the 12.5% discount that was previously applied. It was found that if the discount had been applied over the 12 month period, the total discounted amount would have been \$1 172 928.16. Apposed to this, the new point system totals \$48 030 of credited dollars over the 12 month period. This incentive provides an ongoing incentive for customers to return to BitsAndBob's as points cannot be used at other stores which draws customers back to BitsAndBob's. It is also important to mention that not all customers will use their points, as they may not accumulate enough, unsure of how to use them, forget about them or don't care to use them.

It is in our opinion that BitsAndBobs tracks their new point system to provide best value for its best customers. Using the point system as a loyalty tracker to provide incentives for specific reoccurring customers allows for a personalised experience and recognition from the business. This can be tracked using a tiering system on total revenue generated by each customer. For example, tiers of bronze, silver and gold status can be applied to customers, the more you spend the higher your tier. Based off the average spending of \$3 500 for each customer. Tiers progressively become more beneficial for customers applying further discounts, packages, etc. All registered customers will start at bronze tier, customers total spendings over the average become silver tier, and the top customers will be gold tier with spending's over \$5 000. These figures are subject to change based on future sales projections and branch sales.

An extremely beneficial business opportunity for BitsAndBob's would also be to develop an app that allows customers to shop, track their loyalty points, view profile status, see current discounts and sales etc. Increased exposure of the business through an app is extremely beneficial for businesses who wish to reach a bigger audience as apps are convenient, easy to navigate and highly accessible through smart phones and smart devices. Although app development and maintenance of the system is costly, the benefits outweigh the costs.

## Trend Analysis

As seen in figures 3-5, our trend analysis indicates that Bits and Bobs have a steady stream of demand for their goods and services. Our conclusion is that the services Bits and Bobs provide is of everyday value to the average customer, meaning that customers buy Bits and Bobs products irrespective of buying time. Moreover, this might indicate that the general product offering at Bits and Bobs has a natural exposure to the average customer. In that case it is our recommendation that Bits and Bobs do not employ special weekday discounts, which are commonly used to increase sales in periods of low relative sales. This is due to the steady streams of sales that Bits and Bobs exhibit.

In figure 5, there seems to be a slight reduction in mean sales in October and April. However, since the provided data covers one year of sales the decrease in sales can not be attributed to yearly sales patterns. It could be that the October and April data are current outliers when compared to future sales.

# Dashboard

Please use this [Dashboard link](https://app.powerbi.com/links/JhuNNHLZZk?ctid=ee903dcb-2b77-4da5-be02-c45235783dad&pbi_source=linkShare) to access the dynamic dashboard designed for BitsAndBobs.

[https://app.powerbi.com/links/JhuNNHLZZk?ctid=ee903dcb-2b77-4da5-be02-c45235783dad&pbi\\_source=linkShare](https://app.powerbi.com/links/JhuNNHLZZk?ctid=ee903dcb-2b77-4da5-be02-c45235783dad&pbi_source=linkShare)

## Appendix A.

```
-- Staff IDs are unique across offices. This also means that no staff member have been working at multiple offices
SELECT [Staff ID]
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY [Staff ID]
HAVING COUNT(DISTINCT [Staff office]) > 1
ORDER BY [Staff ID]

-- Receipt ideas are unique across stores
SELECT [Receipt ID]
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY [Receipt ID]
HAVING COUNT(DISTINCT [Staff Office]) > 1
ORDER BY [Receipt ID]

-----
-- THERE ARE TWO BRANCHES WITH AN EMPLOYEE NAMED ISABELLA GREEN
-----

SELECT [Staff First Name], [Staff Surname], MAX([Staff Office]) AS [Staff Office]
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY [Staff First Name], [Staff Surname]
HAVING COUNT(DISTINCT [Staff Office]) > 1
ORDER BY [Staff Surname];

SELECT [Staff First Name], [Staff Surname], [Staff Office], [Office Location]
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
WHERE [Staff First Name] = 'Isabella' AND [Staff Surname] = 'Green';

-- All offices have a unique Staff Office (Next 2)

SELECT TOP 10 [Staff Office], MAX([Office Location]) AS [Office Location]
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY [Staff Office]
HAVING COUNT(DISTINCT [Office Location]) > 1;

SELECT TOP 10 MAX([Staff Office]) AS [Staff Office], [Office Location]
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY [Office Location]
HAVING COUNT(DISTINCT [Staff Office]) > 1;

-- All Item IDs and Item Descriptions Match (Next 2)
SELECT [Item ID], MAX([Item Description]) AS [Item Description]
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY [Item ID]
HAVING COUNT(DISTINCT [Item Description]) > 1
ORDER BY [Item ID];

SELECT [Item Description], MIN([Item ID]) AS [Item ID]
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY [Item Description]
HAVING COUNT(DISTINCT [Item ID]) > 1
ORDER BY [Item Description];
```

```

/* Renamed Reciept ID and Reciept Transaction Row ID capitalize and spell correctly, this will be done by changing the excel file's alias*/

/* Checking for duplicate Item ID's with Item Descriptions */
SELECT [Item Description]
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']

GROUP BY [Item Description]
HAVING COUNT(DISTINCT [Item ID]) > 1;

SELECT DISTINCT[Item ID], [Item Description]
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
ORDER BY [Item ID]

/*
Identified no duplicates
*/

/* Identifying duplicate reciept ids */
SELECT [Receipt ID], COUNT(DISTINCT [Customer ID])
FROM [EBUS3030_assignment_1].[dbo].['Asgn1 Data$']
GROUP BY [Receipt ID]
HAVING COUNT(DISTINCT "Customer ID") > 1

/* Finds duplicate Reciept ID's */

SELECT [Receipt ID], COUNT(DISTINCT [Customer ID])
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
GROUP BY [Receipt ID]
HAVING COUNT(DISTINCT "Customer ID") > 1

/* Removes duplicate reciept ID's */

UPDATE [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
SET [Receipt ID] = (
    SELECT MAX([Receipt ID]) + 1
    FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
)
WHERE [Receipt ID] = '104312'
AND [Customer ID] = 'C148';

UPDATE [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
SET [Receipt ID] = (
    SELECT MAX([Receipt ID]) + 1
    FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$']
)
WHERE [Receipt ID] = '118551'
AND [Customer ID] = 'C423';

/* All duplicate receipt id's have been removed and given new id's */

```

```

/* Identifying duplicate item descriptions per transaction */
WITH cnt([Receipt ID], "Rows") AS (
    SELECT [Receipt ID], COUNT([Receipt ID]) AS "Rows"
    FROM [EBUS3030_assignment_1].[dbo].[Asgn1 Data$']
    GROUP BY [Receipt ID]
)

SELECT ['Asgn1 Data$'].[Receipt ID], "Rows", COUNT(DISTINCT "Item ID") AS "Number of Items"
FROM [EBUS3030_assignment_1].[dbo].[Asgn1 Data$']
JOIN cnt ON ['Asgn1 Data$'].[Receipt ID] = cnt.[Receipt ID]
GROUP BY ['Asgn1 Data$'].[Receipt ID], "Rows"
HAVING COUNT(DISTINCT "Item ID") != "Rows";

/* No duplication found */

/* Identifying which receipt Id's contain multiple staff ID */
WITH ROW_UPDATE AS (
    SELECT [Receipt ID], [Staff ID], [Staff First Name], [Staff Surname], ROW_NUMBER() OVER (PARTITION BY [Receipt ID] ORDER BY [Receipt Transaction Row ID]) AS new_row_number
    FROM [EBUS3030_assignment_2].[dbo].[Assignment 2 Data$']
    WHERE [Receipt ID] IN (
        SELECT [Receipt ID]
        FROM [EBUS3030_assignment_2].[dbo].[Assignment 2 Data$']
        GROUP BY [Receipt ID]
        HAVING COUNT(DISTINCT "Staff ID") > 1
    )
)

UPDATE sss
SET sss.[Staff ID] = ROW_UPDATE.[Staff ID], sss.[Staff First Name] = ROW_UPDATE.[Staff First Name], sss.[Staff Surname] = ROW_UPDATE.[Staff Surname]
FROM [EBUS3030_assignment_2].[dbo].[Assignment 2 Data$'] sss
INNER JOIN ROW_UPDATE ON sss.[Receipt ID] = ROW_UPDATE.[Receipt ID]
WHERE ROW_UPDATE.new_row_number = 1;

/* All receipts with multiple Staff ID's have been set to the first Staff ID listed on the entire receipt */

/* Check for duplicate staff ID's */
SELECT DISTINCT[Staff ID], [Staff First Name], [Staff Surname]
FROM [EBUS3030_assignment_2].[dbo].[Assignment 2 Data$']
ORDER BY [Staff ID]

SELECT [Staff ID], COUNT(DISTINCT [Staff First Name]), COUNT(DISTINCT [Staff Surname])
FROM [EBUS3030_assignment_2].[dbo].[Assignment 2 Data$']
GROUP BY [Staff ID]
HAVING COUNT(DISTINCT [Staff First Name]) > 1 OR COUNT(DISTINCT [Staff Surname]) > 1

/* Finds no duplicated staff id's*/

```

```

-- All stores have the same item offerings (Next 2)

```

```

SELECT DISTINCT([Staff office]), count(DISTINCT[Item ID]) as NrOfItems
FROM [EBUS3030_assignment_2].[dbo].[Assignment 2 Data$']
GROUP BY[Staff office]

SELECT COUNT(DISTINCT[Item ID]) as NrOfItems
FROM [EBUS3030_assignment_2].[dbo].[Assignment 2 Data$']

-- Count how many staff members are at each store

SELECT COUNT(DISTINCT [Staff ID]) AS [Count], [Office Location], [Staff Office]
FROM [EBUS3030_assignment_2].[dbo].[Assignment 2 Data$']
GROUP BY [Office Location], [Staff Office]
ORDER BY [Count] DESC;

```

B.

```
IF DB_ID(N'EBUS3030_assignment_2') IS NOT NULL --Check if it already exists, if so drop, otherwise create
BEGIN
    DROP DATABASE EBUS3030_assignment_2;
END
GO

CREATE DATABASE EBUS3030_assignment_2;
GO

USE EBUS3030_assignment_2;
GO

DROP TABLE IF EXISTS dbo.FactSale;
DROP TABLE IF EXISTS dbo.DimCustomer;
DROP TABLE IF EXISTS dbo.DimStaff;
DROP TABLE IF EXISTS dbo.DimItem;
DROP TABLE IF EXISTS dbo.DimDate;
DROP TABLE IF EXISTS dbo.StoreTable;

CREATE TABLE DimCustomer
(
    [Customer ID] nvarchar(255),
    [Customer First Name] nvarchar(255),
    [Customer Surname] nvarchar(255),
    PRIMARY KEY ([Customer ID])
)
GO

CREATE TABLE DimStaff
(
    [Staff ID] nvarchar(255),
    [Staff First Name] nvarchar(255),
    [Staff Surname] nvarchar(255),
    [Staff Office] smallint,
    [Office Location] nvarchar(255),
    PRIMARY KEY ([Staff ID])
)
GO

CREATE TABLE DimItem
(
    [Item ID] smallint,
    [Item Description] nvarchar(255)
    PRIMARY KEY ([Item ID])
)
GO

CREATE TABLE DimDate
(
    [Sale Date] Date,
    SaleMonth smallint,
    SaleYear smallint
    PRIMARY KEY ([Sale Date])
)
GO

CREATE TABLE StoreTable
(
    [Staff Office] smallint,
    [Office Location] nvarchar(255),
    PRIMARY KEY ([Office Location])
)
GO
```



```

CREATE TABLE FactSale
(
    [Receipt ID] int,
    [Receipt Transaction Row ID] smallint,
    [Customer ID] nvarchar(255),
    [Staff ID] nvarchar(255),
    [Staff Office] smallint,
    [Office Location] nvarchar(255),
    [Item ID] smallint,
    [Sale Date] date,
    [Item Quantity] smallint,
    [Item Price] smallmoney,
    [Row Total] smallmoney

    PRIMARY KEY ([Receipt ID], [Receipt Transaction Row ID])
    FOREIGN KEY ([Customer ID]) REFERENCES DimCustomer([Customer ID]),
    FOREIGN KEY ([Staff ID]) REFERENCES DimStaff([Staff ID]),
    FOREIGN KEY ([Item ID]) REFERENCES DimItem([Item ID]),
    FOREIGN KEY ([Sale Date]) REFERENCES DimDate([Sale Date]),
)
GO

```

C.

```

INSERT INTO DimCustomer ([Customer ID], [Customer First Name], [Customer Surname])
SELECT DISTINCT [Customer ID], [Customer First Name], [Customer Surname]
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$'];

INSERT INTO DimStaff ([Staff ID], [Staff First Name], [Staff Surname], [Staff Office], [Office Location])
SELECT DISTINCT [Staff ID], [Staff First Name], [Staff Surname], [Staff Office], [Office Location]
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$'];

INSERT INTO DimItem ([Item ID], [Item Description])
SELECT DISTINCT [Item ID], [Item Description]
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$'];

INSERT INTO DimDate([Sale Date], SaleMonth, SaleYear)
SELECT DISTINCT [Sale Date], month([Sale Date]), year([Sale Date])
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$'];

INSERT INTO StoreTable([Staff Office], [Office Location])
SELECT DISTINCT [Staff Office], [Office Location]
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$'];

INSERT INTO FactSale([Receipt ID], [Receipt Transaction Row ID], [Customer ID], [Staff ID], [Staff Office], [Office Location], [Item ID], [Sale Date], [Item Quantity], [Item Price], [Row Total])
SELECT DISTINCT [Receipt ID], [Receipt Transaction Row ID], [Customer ID], [Staff ID], [Staff Office], [Office Location], [Item ID], [Sale Date], [Item Quantity], [Item Price], [Row Total]
FROM [EBUS3030_assignment_2].[dbo].['Assignment 2 Data$'];

```

