Just IT

B2W group

Apprenticeships | Training | Recruitment

# Data Technician

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**Course Date: 16/12/24**

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## Day 1: Task 1

Please complete the below boxes on commons laws and regulations that must be followed when working with customers data, use the below bulleted list to support your answers.

- What is it
- Why is it important
- Provide a real-world example of how you can follow it
- How does it impact working with data
- What could happen if you breached it

| | |
|---|---|
| **Data Protection Act** | **What is it?**<br>The Data Protection Act (DPA) is a UK law that governs how personal data is processed, stored, and shared to protect individuals' privacy. The most recent version is the Data Protection Act 2018, which incorporates the EU's General Data Protection Regulation (GDPR) into UK law post-Brexit. |

**Why is it important?**
Protects individuals' privacy, ensures transparency, and prevents misuse of data.
**Real-world example:**
A GP surgery must:
① Store medical records with strong encryption
② Only share patient data with other clinicians when necessary
③ Let patients access their records within 1 month (SAR)
④ Not keep records longer than NHS retention policies
**Impact on working with data:**
For organizations:
- Must register with ICO unless exempt (fee applies)
- Need lawful basis for all processing
- Special rules for criminal offense data
- Extra protections for children's data

For individuals:
- Right to be informed about data use
- Can request erasure of social media posts
- Protection against automated decision-making

**Breach consequences:**

| Violation | Maximum Penalty |
|---|---|
| Standard infringements | £8.7M or 2% global turnover |
| Serious infringements | £17.5M or 4% global turnover |

Additional risks:
• ICO investigations and audits
• Compensation claims from individuals
• Loss of data sharing privileges

## GDPR

**What is it?**
The General Data Protection Regulation (GDPR) is a comprehensive EU/UK data privacy law that governs how organizations collect, process, and protect personal data. It came into force in May 2018 and was retained in UK law post-Brexit as the UK GDPR, alongside the Data Protection Act 2018 (DPA 2018).
**Why is it important?**
Standardizes data rights across the EU/UK and holds organizations accountable.
**Real-world example:**
A retail company must:
① Get clear consent before emailing marketing offers (no pre-ticked boxes)
② Encrypt customer payment details
③ Delete old customer records after 5 years of inactivity
④ Report a data breach within 72 hours if risks exist
**Impact on working with data:**
For businesses:
- Must document all data processing activities
- Need Data Protection Officers if handling sensitive data
- Required to conduct Privacy Impact Assessments for risky projects
- Must implement "privacy by design" in new systems

<table>
<tr><td></td><td>For individuals:<br>● Right to access all data held about you (SAR)<br>● Can demand corrections or deletions<br>● Can object to profiling/automated decisions<br>Breach consequences:<br>Violation Type | Potential Penalty<br>Minor (e.g., poor record-keeping) | Up to €10M or 2% global revenue<br>Major (e.g., security negligence) | Up to €20M or 4% global revenue<br>Additional risks:<br>• Class-action lawsuits from affected users<br>• Permanent loss of customer trust<br>• Bans on data processing activities</td></tr>
<tr><td>Freedom of Information Act</td><td>What is it?<br>The Freedom of Information Act 2000 (FOIA) is a UK law that gives individuals the right to access recorded information held by public authorities, promoting transparency and accountability in government.<br>Why is it important?<br>Promotes government transparency and accountability.<br>Real-world example:<br>Scenario: A citizen requests:<br>① COVID-19 spending by their local council<br>② Council responds within 20 working days<br>③ Releases redacted PDFs (protecting personal data)<br>④ Explains any exemptions used (e.g., commercial confidentiality)<br>Impact on working with data:<br>For public sector workers:<br>● Must keep records organized for easy retrieval<br>● Need systems to track requests/deadlines<br>● Required to redact exempt information (e.g., personal data under GDPR)<br>For requesters:<br>● No need to justify requests<br>● Can ask for data in specific formats (e.g., spreadsheets)<br>Breach consequences:<br>Violation | Potential Outcome<br>Missing deadline (20 days) | ICO investigation + enforcement notice<br>Wrongful refusal | Forced disclosure + reputational damage<br>Destroying records to avoid FOIA | Criminal charges for staff</td></tr>
<tr><td>Computer Misuse Act</td><td>What is it?<br>UK law criminalizing unauthorized access to computers and cybercrimes.<br>Why is it important?<br>Deters hacking, data theft, and cyberattacks. Maintains trust in digital systems.<br>Real-world example:<br>Scenario: A penetration tester:<br>① Gets written permission before testing a company's systems<br>② Avoids copying/deleting data beyond the agreed scope<br>③ Reports vulnerabilities responsibly<br>Impact on working with data:</td></tr>
</table>

- Requires strict access controls (e.g., role-based permissions)
- Mandates activity logging to detect unauthorized access
- Prohibits use of exploits/malware (even for "research") without authorization

**Breach consequences:**

| Offence | Potential Penalty |
|---|---|
| **Basic hacking** (Section 1) | 2 years prison + fine |
| **Hacking to commit fraud** (Section 2) | 5 years prison |
| **Deploying ransomware** (Section 3) | 10-14 years prison |
| **Selling hacking tools** (Section 3A) | Same as Section 3 |

## Day 2: Task 1

Please research and complete the following tasks within the retail-sales_dataset.xlsx document, paste a print screen into the provided boxes below:

1. In the sheet 'retail_sales_dataset' add all available data between columns A –J into a 'table'
2. Using the 'sort' function, sort 'Age' to 'largest to smallest'
3. Using the 'SUM' function, show me the commission total in cell 'L10'
4. Using the 'AVERAGE' function, show me the average commission in cell 'L11'

**Print screen 1**

| Transaction II | Date | Customer II | Gender | Age | Product Categor | Quantity | Price per Uni | Revenue | Commissio |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 11/24/2023 | CUST001 | Male | 34 | Beauty | 3 | $50.0 | $150.00 | $2.25 |
| 2 | 2/27/2023 | CUST002 | Female | 26 | Clothing | 2 | $500.0 | $1,000.00 | $15.00 |
| 3 | 1/13/2023 | CUST003 | Male | 50 | Electronics | 1 | $30.0 | $30.00 | $0.45 |
| 4 | 5/21/2023 | CUST004 | Male | 37 | Clothing | 1 | $500.0 | $500.00 | $7.50 |
| 5 | 5/6/2023 | CUST005 | Male | 30 | Beauty | 2 | $50.0 | $100.00 | $1.50 |
| 6 | 4/25/2023 | CUST006 | Female | 45 | Beauty | 1 | $30.0 | $30.00 | $0.45 |
| 7 | 3/13/2023 | CUST007 | Male | 46 | Clothing | 2 | $25.0 | $50.00 | $0.75 |
| 8 | 2/22/2023 | CUST008 | Male | 30 | Electronics | 4 | $25.0 | $100.00 | $1.50 |
| 9 | 12/13/2023 | CUST009 | Male | 63 | Electronics | 2 | $300.0 | $600.00 | $9.00 |
| 10 | 10/7/2023 | CUST010 | Female | 52 | Clothing | 4 | $50.0 | $200.00 | $3.00 |
| 11 | 2/14/2023 | CUST011 | Male | 23 | Clothing | 2 | $50.0 | $100.00 | $1.50 |
| 12 | 10/30/2023 | CUST012 | Male | 35 | Beauty | 3 | $25.0 | $75.00 | $1.13 |
| 13 | 8/5/2023 | CUST013 | Male | 22 | Electronics | 3 | $500.0 | $1,500.00 | $22.50 |
| 14 | 1/17/2023 | CUST014 | Male | 64 | Clothing | 4 | $30.0 | $120.00 | $1.80 |
| 15 | 1/16/2023 | CUST015 | Female | 42 | Electronics | 4 | $500.0 | $2,000.00 | $30.00 |
| 16 | 2/17/2023 | CUST016 | Male | 19 | Clothing | 3 | $500.0 | $1,500.00 | $22.50 |
| 17 | 4/22/2023 | CUST017 | Female | 27 | Clothing | 4 | $25.0 | $100.00 | $1.50 |
| 18 | 4/30/2023 | CUST018 | Female | 47 | Electronics | 2 | $25.0 | $50.00 | $0.75 |
| 19 | 9/16/2023 | CUST019 | Female | 62 | Clothing | 2 | $25.0 | $50.00 | $0.75 |
| 20 | 11/5/2023 | CUST020 | Male | 22 | Clothing | 3 | $300.0 | $900.00 | $13.50 |
| 21 | 1/14/2023 | CUST021 | Female | 50 | Beauty | 1 | $500.0 | $500.00 | $7.50 |

**Print screen 2**

| Transaction II | Date | Customer II | Gender | Age | Product Categor | Quantity | Price per Uni | Revenue | Commissio |
|---|---|---|---|---|---|---|---|---|---|
| 14 | 1/17/2023 | CUST014 | Male | 64 | Clothing | 4 | $30.0 | $120.00 | $1.80 |
| 25 | 12/26/2023 | CUST025 | Female | 64 | Beauty | 1 | $50.0 | $50.00 | $0.75 |
| 80 | 12/10/2023 | CUST080 | Female | 64 | Clothing | 2 | $30.0 | $60.00 | $0.90 |
| 122 | 10/3/2023 | CUST122 | Male | 64 | Electronics | 4 | $30.0 | $120.00 | $1.80 |
| 161 | 3/22/2023 | CUST161 | Male | 64 | Beauty | 2 | $500.0 | $1,000.00 | $15.00 |
| 163 | 1/2/2023 | CUST163 | Female | 64 | Clothing | 3 | $50.0 | $150.00 | $2.25 |
| 173 | 11/8/2023 | CUST173 | Male | 64 | Electronics | 4 | $30.0 | $120.00 | $1.80 |
| 187 | 6/7/2023 | CUST187 | Female | 64 | Clothing | 2 | $50.0 | $100.00 | $1.50 |
| 191 | 10/18/2023 | CUST191 | Male | 64 | Beauty | 1 | $25.0 | $25.00 | $0.38 |
| 218 | 9/22/2023 | CUST218 | Male | 64 | Beauty | 3 | $30.0 | $90.00 | $1.35 |
| 220 | 3/3/2023 | CUST220 | Male | 64 | Beauty | 1 | $500.0 | $500.00 | $7.50 |
| 223 | 2/2/2023 | CUST223 | Female | 64 | Clothing | 1 | $25.0 | $25.00 | $0.38 |
| 282 | 8/25/2023 | CUST282 | Female | 64 | Electronics | 4 | $50.0 | $200.00 | $3.00 |
| 363 | 6/3/2023 | CUST363 | Male | 64 | Beauty | 1 | $25.0 | $25.00 | $0.38 |
| 376 | 5/16/2023 | CUST376 | Female | 64 | Beauty | 1 | $30.0 | $30.00 | $0.45 |
| 399 | 3/1/2023 | CUST399 | Female | 64 | Beauty | 2 | $30.0 | $60.00 | $0.90 |
| 408 | 4/15/2023 | CUST408 | Female | 64 | Beauty | 1 | $500.0 | $500.00 | $7.50 |
| 429 | 12/28/2023 | CUST429 | Male | 64 | Electronics | 2 | $25.0 | $50.00 | $0.75 |
| 440 | 10/26/2023 | CUST440 | Male | 64 | Clothing | 2 | $300.0 | $600.00 | $9.00 |
| 473 | 2/25/2023 | CUST473 | Male | 64 | Beauty | 1 | $50.0 | $50.00 | $0.75 |
| 532 | 6/19/2023 | CUST532 | Female | 64 | Clothing | 4 | $30.0 | $120.00 | $1.80 |

**Print screen 3**

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Transaction I | Date | Customer I | Gender | Age | Product Categor | Quantit | Price per Un | Revenu | Commissio | | |
| 2 | 14 | 1/17/2023 | CUST014 | Male | 64 | Clothing | 4 | $30.0 | $120.00 | $1.80 | | Commissi |
| 3 | 25 | 12/26/2023 | CUST025 | Female | 64 | Beauty | 1 | $50.0 | $50.00 | $0.75 | | |
| 4 | 80 | 12/10/2023 | CUST080 | Female | 64 | Clothing | 2 | $30.0 | $60.00 | $0.90 | | |
| 5 | 122 | 10/3/2023 | CUST122 | Male | 64 | Electronics | 4 | $30.0 | $120.00 | $1.80 | | |
| 6 | 161 | 3/22/2023 | CUST161 | Male | 64 | Beauty | 2 | $500.0 | $1,000.00 | $15.00 | | |
| 7 | 163 | 1/2/2023 | CUST163 | Female | 64 | Clothing | 3 | $50.0 | $150.00 | $2.25 | | |
| 8 | 173 | 11/8/2023 | CUST173 | Male | 64 | Electronics | 4 | $30.0 | $120.00 | $1.80 | | |
| 9 | 187 | 6/7/2023 | CUST187 | Female | 64 | Clothing | 2 | $50.0 | $100.00 | $1.50 | | |
| 10 | 191 | 10/18/2023 | CUST191 | Male | 64 | Beauty | 1 | $25.0 | $25.00 | $0.38 | total of commission | $6,840 |
| 11 | 218 | 9/22/2023 | CUST218 | Male | 64 | Beauty | 3 | $30.0 | $90.00 | $1.35 | average commission | $6 |
| 12 | 220 | 3/3/2023 | CUST220 | Male | 64 | Beauty | 1 | $500.0 | $500.00 | $7.50 | | |
| 13 | 223 | 2/2/2023 | CUST223 | Female | 64 | Clothing | 1 | $25.0 | $25.00 | $0.38 | | |
| 14 | 282 | 8/25/2023 | CUST282 | Female | 64 | Electronics | 4 | $50.0 | $200.00 | $3.00 | | |
| 15 | 363 | 6/3/2023 | CUST363 | Male | 64 | Beauty | 1 | $25.0 | $25.00 | $0.38 | | |
| 16 | 376 | 5/16/2023 | CUST376 | Female | 64 | Beauty | 1 | $30.0 | $30.00 | $0.45 | | |
| 17 | 399 | 3/1/2023 | CUST399 | Female | 64 | Beauty | 2 | $30.0 | $60.00 | $0.90 | | |
| 18 | 408 | 4/15/2023 | CUST408 | Female | 64 | Beauty | 1 | $500.0 | $500.00 | $7.50 | | |
| 19 | 429 | 12/28/2023 | CUST429 | Male | 64 | Electronics | 2 | $25.0 | $50.00 | $0.75 | | |
| 20 | 440 | 10/26/2023 | CUST440 | Male | 64 | Clothing | 2 | $300.0 | $600.00 | $9.00 | | |
| 21 | 473 | 2/25/2023 | CUST473 | Male | 64 | Beauty | 1 | $50.0 | $50.00 | $0.75 | | |
| 22 | 532 | 6/19/2023 | CUST532 | Female | 64 | Clothing | 4 | $30.0 | $120.00 | $1.80 | | |
| 23 | 561 | 5/27/2023 | CUST561 | Female | 64 | Clothing | 4 | $500.0 | $2,000.00 | $30.00 | | |
| 24 | 566 | 12/2/2023 | CUST566 | Female | 64 | Clothing | 1 | $30.0 | $30.00 | $0.45 | | |
| 25 | 596 | 2/7/2023 | CUST596 | Female | 64 | Electronics | 1 | $300.0 | $300.00 | $4.50 | | |
| 26 | 692 | 9/7/2023 | CUST692 | Female | 64 | Clothing | 2 | $50.0 | $100.00 | $1.50 | | |

**Print screen 4**

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Transaction I | Date | Customer I | Gender | Age | Product Categor | Quantit | Price per Un | Revenu | Commissio | | |
| 2 | 14 | 1/17/2023 | CUST014 | Male | 64 | Clothing | 4 | $30.0 | $120.00 | $1.80 | | Commissi |
| 3 | 25 | 12/26/2023 | CUST025 | Female | 64 | Beauty | 1 | $50.0 | $50.00 | $0.75 | | |
| 4 | 80 | 12/10/2023 | CUST080 | Female | 64 | Clothing | 2 | $30.0 | $60.00 | $0.90 | | |
| 5 | 122 | 10/3/2023 | CUST122 | Male | 64 | Electronics | 4 | $30.0 | $120.00 | $1.80 | | |
| 6 | 161 | 3/22/2023 | CUST161 | Male | 64 | Beauty | 2 | $500.0 | $1,000.00 | $15.00 | | |
| 7 | 163 | 1/2/2023 | CUST163 | Female | 64 | Clothing | 3 | $50.0 | $150.00 | $2.25 | | |
| 8 | 173 | 11/8/2023 | CUST173 | Male | 64 | Electronics | 4 | $30.0 | $120.00 | $1.80 | | |
| 9 | 187 | 6/7/2023 | CUST187 | Female | 64 | Clothing | 2 | $50.0 | $100.00 | $1.50 | | |
| 10 | 191 | 10/18/2023 | CUST191 | Male | 64 | Beauty | 1 | $25.0 | $25.00 | $0.38 | total of commission | $6,840 |
| 11 | 218 | 9/22/2023 | CUST218 | Male | 64 | Beauty | 3 | $30.0 | $90.00 | $1.35 | average commission | $6 |
| 12 | 220 | 3/3/2023 | CUST220 | Male | 64 | Beauty | 1 | $500.0 | $500.00 | $7.50 | | |
| 13 | 223 | 2/2/2023 | CUST223 | Female | 64 | Clothing | 1 | $25.0 | $25.00 | $0.38 | | |
| 14 | 282 | 8/25/2023 | CUST282 | Female | 64 | Electronics | 4 | $50.0 | $200.00 | $3.00 | | |
| 15 | 363 | 6/3/2023 | CUST363 | Male | 64 | Beauty | 1 | $25.0 | $25.00 | $0.38 | | |
| 16 | 376 | 5/16/2023 | CUST376 | Female | 64 | Beauty | 1 | $30.0 | $30.00 | $0.45 | | |
| 17 | 399 | 3/1/2023 | CUST399 | Female | 64 | Beauty | 2 | $30.0 | $60.00 | $0.90 | | |
| 18 | 408 | 4/15/2023 | CUST408 | Female | 64 | Beauty | 1 | $500.0 | $500.00 | $7.50 | | |
| 19 | 429 | 12/28/2023 | CUST429 | Male | 64 | Electronics | 2 | $25.0 | $50.00 | $0.75 | | |
| 20 | 440 | 10/26/2023 | CUST440 | Male | 64 | Clothing | 2 | $300.0 | $600.00 | $9.00 | | |
| 21 | 473 | 2/25/2023 | CUST473 | Male | 64 | Beauty | 1 | $50.0 | $50.00 | $0.75 | | |
| 22 | 532 | 6/19/2023 | CUST532 | Female | 64 | Clothing | 4 | $30.0 | $120.00 | $1.80 | | |
| 23 | 561 | 5/27/2023 | CUST561 | Female | 64 | Clothing | 4 | $500.0 | $2,000.00 | $30.00 | | |
| 24 | 566 | 12/2/2023 | CUST566 | Female | 64 | Clothing | 1 | $30.0 | $30.00 | $0.45 | | |
| 25 | 596 | 2/7/2023 | CUST596 | Female | 64 | Electronics | 1 | $300.0 | $300.00 | $4.50 | | |
| 26 | 692 | 9/7/2023 | CUST692 | Female | 64 | Clothing | 2 | $50.0 | $100.00 | $1.50 | | |

## Day 2: Task 2

Please research and complete the following tasks within the retail-sales_dataset.xlsx document, paste print screens into the provided box below:

| Student name | English | Mathematic | Science | Average | Highest score |
|---|---|---|---|---|---|
| Carol | 75 | 85 | 85 | | |
| Ted | 80 | 75 | 90 | | |
| Khan | 85 | 75 | 80 | | |
| Harry | 80 | 70 | 80 | | |
| Sarah | 80 | 70 | 80 | | |
| John | 65 | 80 | 70 | | |
| Linda | 90 | 50 | 70 | | |
| Edward | 55 | 80 | 60 | | |
| Mary | 55 | 70 | 65 | | |
| Thomas | 55 | 30 | 65 | | |

Task

1) Apply filter and sorting to show the best students in each subject.
2) Calculate the average for all students and fill into Column E. (Use formula)
3) Using the =MAX fucntion, tell me what the students highest score was in column F.
4) Apply filter and sorting to show the best student in this classroom by average.
5) Apply filter and sorting to show the best student in this classroom by highest score.
6) Use conditional formatting to clearly identify the highest and lowest average scores

**Print screen 1**

**English Subject - Best students**

| Student name | English | Mathema | Scienc | Averag | Highest sco |
|---|---|---|---|---|---|
| Linda | 90 | 50 | 70 | 70.00 | 90 |
| Khan | 85 | 75 | 80 | 80.00 | 85 |
| Ted | 80 | 75 | 90 | 81.67 | 90 |
| Harry | 80 | 70 | 80 | 76.67 | 80 |
| Sarah | 80 | 70 | 80 | 76.67 | 80 |
| Carol | 75 | 85 | 85 | 81.67 | 85 |
| John | 65 | 80 | 70 | 71.67 | 80 |
| Edward | 55 | 80 | 60 | 65.00 | 80 |
| Mary | 55 | 70 | 65 | 63.33 | 70 |
| Thomas | 55 | 30 | 65 | 50.00 | 65 |

**Math Subject - Best students**

| Student name | English | Mathema | Scienc | Averag | Highest scc |
|---|---|---|---|---|---|
| Carol | 75 | 85 | 85 | 81.67 | 85 |
| John | 65 | 80 | 70 | 71.67 | 80 |
| Edward | 55 | 80 | 60 | 65.00 | 80 |
| Khan | 85 | 75 | 80 | 80.00 | 85 |
| Ted | 80 | 75 | 90 | 81.67 | 90 |
| Harry | 80 | 70 | 80 | 76.67 | 80 |
| Sarah | 80 | 70 | 80 | 76.67 | 80 |
| Mary | 55 | 70 | 65 | 63.33 | 70 |
| Linda | 90 | 50 | 70 | 70.00 | 90 |
| Thomas | 55 | 30 | 65 | 50.00 | 65 |

**Science Subject - Best students**

| Student name | English | Mathema | Scienc | Averag | Highest scc |
|---|---|---|---|---|---|
| Ted | 80 | 75 | 90 | 81.67 | 90 |
| Carol | 75 | 85 | 85 | 81.67 | 85 |
| Khan | 85 | 75 | 80 | 80.00 | 85 |
| Harry | 80 | 70 | 80 | 76.67 | 80 |
| Sarah | 80 | 70 | 80 | 76.67 | 80 |
| John | 65 | 80 | 70 | 71.67 | 80 |
| Linda | 90 | 50 | 70 | 70.00 | 90 |
| Mary | 55 | 70 | 65 | 63.33 | 70 |
| Thomas | 55 | 30 | 65 | 50.00 | 65 |
| Edward | 55 | 80 | 60 | 65.00 | 80 |

**Print screen 2**

| Student name | English | Mathema | Scienc | Averag | Highest scc |
|---|---|---|---|---|---|
| Ted | 80 | 75 | 90 | 81.67 | 90 |
| Carol | 75 | 85 | 85 | 81.67 | 85 |
| Khan | 85 | 75 | 80 | 80.00 | 85 |
| Harry | 80 | 70 | 80 | 76.67 | 80 |
| Sarah | 80 | 70 | 80 | 76.67 | 80 |
| John | 65 | 80 | 70 | 71.67 | 80 |
| Linda | 90 | 50 | 70 | 70.00 | 90 |
| Mary | 55 | 70 | 65 | 63.33 | 70 |
| Thomas | 55 | 30 | 65 | 50.00 | 65 |
| Edward | 55 | 80 | 60 | 65.00 | 80 |

**Print screen 3**

**The best students in the classroom by average**

| Student name | English | Mathema | Scienc | Averag | Highest sco |
|---|---|---|---|---|---|
| Ted | 80 | 75 | 90 | 81.67 | 90 |
| Carol | 75 | 85 | 85 | 81.67 | 85 |
| Khan | 85 | 75 | 80 | 80.00 | 85 |
| Harry | 80 | 70 | 80 | 76.67 | 80 |
| Sarah | 80 | 70 | 80 | 76.67 | 80 |
| John | 65 | 80 | 70 | 71.67 | 80 |
| Linda | 90 | 50 | 70 | 70.00 | 90 |
| Mary | 55 | 70 | 65 | 63.33 | 70 |
| Thomas | 55 | 30 | 65 | 50.00 | 65 |
| Edward | 55 | 80 | 60 | 65.00 | 80 |

**Print screen 4**

## The best students in the classroom by highest score

| Student name | English | Mathema | Scienc | Averag | Highest sco |
|---|---|---|---|---|---|
| Ted | 80 | 75 | 90 | 81.67 | 90 |
| Linda | 90 | 50 | 70 | 70.00 | 90 |
| Carol | 75 | 85 | 85 | 81.67 | 85 |
| Khan | 85 | 75 | 80 | 80.00 | 85 |
| Harry | 80 | 70 | 80 | 76.67 | 80 |
| Sarah | 80 | 70 | 80 | 76.67 | 80 |
| John | 65 | 80 | 70 | 71.67 | 80 |
| Edward | 55 | 80 | 60 | 65.00 | 80 |
| Mary | 55 | 70 | 65 | 63.33 | 70 |
| Thomas | 55 | 30 | 65 | 50.00 | 65 |

**Print screen 5**

## Conditional Formatting - Highest and Lowest average scores

| Student name | English | Mathema | Scienc | Averag | Highest sco |
|---|---|---|---|---|---|
| Ted | 80 | 75 | 90 | 81.67 | 90 |
| Carol | 75 | 85 | 85 | 81.67 | 85 |
| Khan | 85 | 75 | 80 | 80.00 | 85 |
| Harry | 80 | 70 | 80 | 76.67 | 80 |
| Sarah | 80 | 70 | 80 | 76.67 | 80 |
| John | 65 | 80 | 70 | 71.67 | 80 |
| Linda | 90 | 50 | 70 | 70.00 | 90 |
| Mary | 55 | 70 | 65 | 63.33 | 70 |
| Thomas | 55 | 30 | 65 | 50.00 | 65 |
| Edward | 55 | 80 | 60 | 65.00 | 80 |

## Day 2: Task 3

Using the skills developed today, have some fun with the data set you have imported. Paste your work below and enjoy!

**Print screen 1**

### Data resources: retail_sales_dataset_Master

### Vlookup Function and Pivot Table

| Transaction ID | Total Sales | Product category |
|---|---|---|
| 10 | $200.00 | Clothing |
| 15 | $2,000.00 | Electronics |
| 25 | $50.00 | Beauty |
| 30 | $900.00 | Beauty |
| 54 | $1,500.00 | Electronics |
| 55 | $120.00 | Beauty |
| 67 | $1,200.00 | Beauty |
| 89 | $2,000.00 | Electronics |
| 100 | $30.00 | Electronics |

| Transaction ID | Product Category | Sum of Rever |
|---|---|---|
| 10 | Clothing | $200 |
| 15 | Electronics | $2,000 |
| 25 | Beauty | $50 |
| 30 | Beauty | $900 |
| 54 | Electronics | $1,500 |
| 55 | Beauty | $120 |
| 67 | Beauty | $1,200 |
| 89 | Electronics | $2,000 |
| 100 | Electronics | $30 |
| Grand Total | | $8,000 |

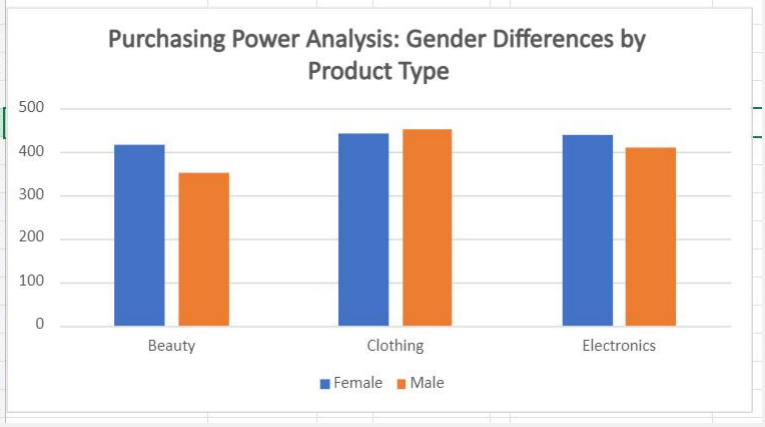
### Functions Training:

| Date | Customer ID | Gender | Age | Product Category | Quantity | Price per Unit | Revenue | Commission |
|---|---|---|---|---|---|---|---|---|
| 2/2/2023 | CUST223 | Female | 64 | Clothing | 1 | $25.0 | $25.00 | $0.38 |
| 8/25/2023 | CUST282 | Female | 64 | Electronics | 4 | $50.0 | $200.00 | $3.00 |
| 6/3/2023 | CUST363 | Male | 64 | Beauty | 1 | $25.0 | $25.00 | $0.38 |
| 5/16/2023 | CUST376 | Female | 64 | Beauty | 1 | $30.0 | $30.00 | $0.45 |
| 3/1/2023 | CUST399 | Female | 64 | Beauty | 2 | $30.0 | $60.00 | $0.90 |
| 4/15/2023 | CUST408 | Female | 64 | Beauty | 1 | $500.0 | $500.00 | $7.50 |
| 12/28/2023 | CUST429 | Male | 64 | Electronics | 2 | $25.0 | $50.00 | $0.75 |
| 10/26/2023 | CUST440 | Male | 64 | Clothing | 2 | $300.0 | $600.00 | $9.00 |
| 2/25/2023 | CUST473 | Male | 64 | Beauty | 1 | $50.0 | $50.00 | $0.75 |
| 6/19/2023 | CUST532 | Female | 64 | Clothing | 4 | $30.0 | $120.00 | $1.80 |
| 5/27/2023 | CUST561 | Female | 64 | Clothing | 4 | $500.0 | $2,000.00 | $30.00 |
| 12/2/2023 | CUST566 | Female | 64 | Clothing | 1 | $30.0 | $30.00 | $0.45 |
| 2/7/2023 | CUST596 | Female | 64 | Electronics | 1 | $300.0 | $300.00 | $4.50 |
| 9/7/2023 | CUST692 | Female | 64 | Clothing | 2 | $50.0 | $100.00 | $1.50 |
| 7/19/2023 | CUST698 | Female | 64 | Electronics | 1 | $300.0 | $300.00 | $4.50 |
| 10/4/2023 | CUST735 | Female | 64 | Clothing | 4 | $500.0 | $2,000.00 | $30.00 |
| 5/12/2023 | CUST758 | Male | 64 | Clothing | 4 | $25.0 | $100.00 | $1.50 |
| 6/22/2023 | CUST830 | Female | 64 | Clothing | 3 | $50.0 | $150.00 | $2.25 |
| 6/6/2023 | CUST882 | Female | 64 | Electronics | 2 | $25.0 | $50.00 | $0.75 |

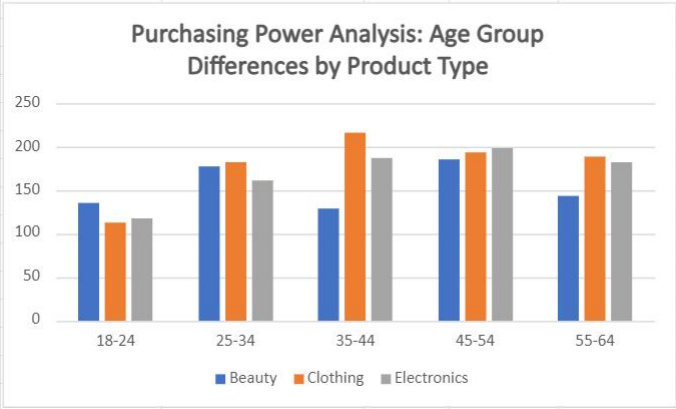
| K | L | M |
|---|---|---|
| sumif | 1216 | SUMIF(Table1[Gender],"Male",Table1[Quantity]) |
| sumifs | 353 | SUMIFS(Table1[Gender],"Male",Table1[Product Category],"Beauty") |
| averageif | 2.48 | AVERAGEIF(Table1[Gender],"Male",Table1[Quantity]) |
| averageifs | 2.50 | AVERAGEIFS(Table1[Gender],"Male",Table1[Product Category],"Beauty") |
| count | 1000 | COUNT(Table1[Quantity]) |
| countA | 1000 | COUNTA(Table1[Gender]) |
| countblank | 0 | COUNTBLANK(Table1[Quantity]) |
| countif | 307 | COUNTIF(Table1[Product Category],"Beauty") |
| counifs | 141 | COUNTIFS(Table1[Product Category],"Beauty",D2:D1001,"Male") |

### Data Analysis:

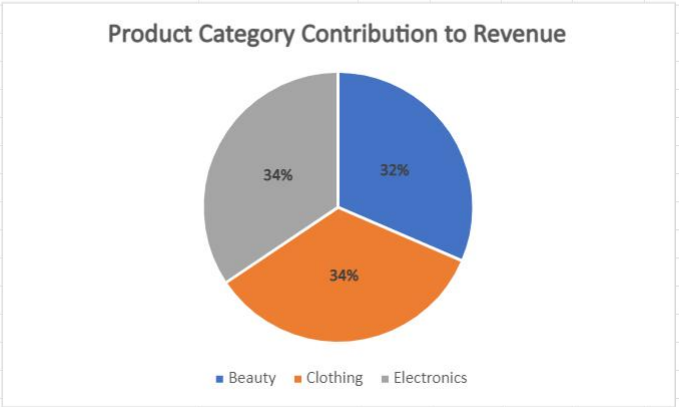
| Sum of Quantity | Gender | | |
|---|---|---|---|
| Product Category | Female | Male | Grand Total |
| Beauty | 418 | 353 | 771 |
| Clothing | 441 | 453 | 894 |
| Electronics | 439 | 410 | 849 |
| **Grand Total** | **1298** | **1216** | **2514** |



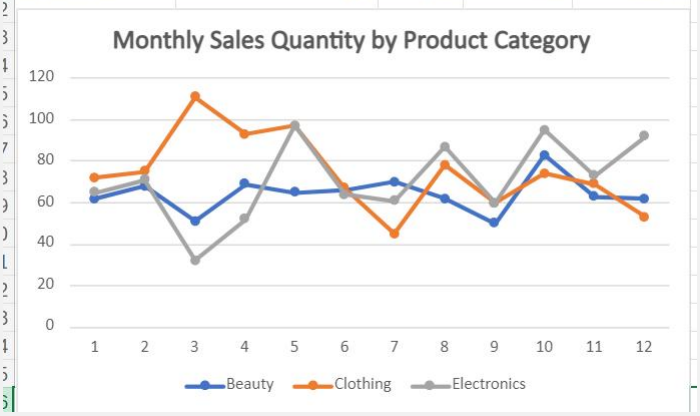

| Sum of Quantity | Product Category | | | |
|---|---|---|---|---|
| Age Group | Beauty | Clothing | Electronics | Grand Total |
| 18-24 | 136 | 112 | 118 | 366 |
| 25-34 | 177 | 183 | 162 | 522 |
| 35-44 | 129 | 216 | 188 | 533 |
| 45-54 | 186 | 194 | 198 | 578 |
| 55-64 | 143 | 189 | 183 | 515 |
| **Grand Total** | **771** | **894** | **849** | **2514** |



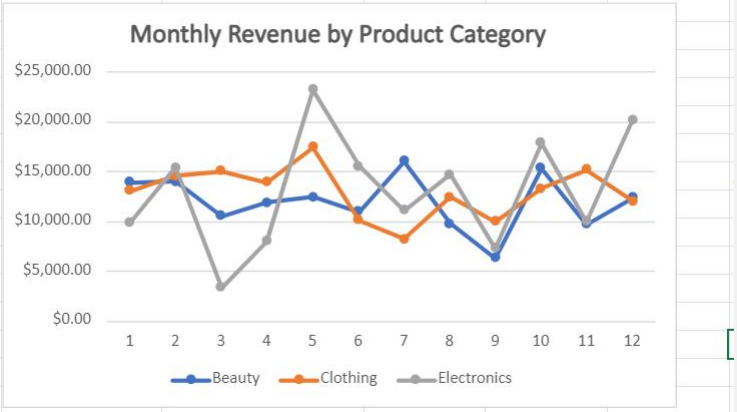
| Product Category | Sum of Revenue |
|---|---|
| Beauty | $143,515.00 |
| Clothing | $155,580.00 |
| Electronics | $156,905.00 |
| **Grand Total** | **$456,000.00** |




| Sum of Quantity | Product Category | | | |
|---|---|---|---|---|
| Month | Beauty | Clothing | Electronics | Grand Total |
| 1 | 62 | 72 | 65 | 199 |
| 2 | 68 | 75 | 71 | 214 |
| 3 | 51 | 111 | 32 | 194 |
| 4 | 69 | 93 | 52 | 214 |
| 5 | 65 | 97 | 97 | 259 |
| 6 | 66 | 67 | 64 | 197 |
| 7 | 70 | 45 | 61 | 176 |
| 8 | 62 | 78 | 87 | 227 |
| 9 | 50 | 60 | 60 | 170 |
| 10 | 83 | 74 | 95 | 252 |
| 11 | 63 | 69 | 73 | 205 |
| 12 | 62 | 53 | 92 | 207 |
| **Grand Total** | **771** | **894** | **849** | **2514** |



| Sum of Revenue | Product Category | | | |
|---|---|---|---|---|
| Month | Beauty | Clothing | Electronics | Grand Total |
| 1 | $13,930.00 | $13,125.00 | $9,925.00 | $36,980.00 |
| 2 | $14,035.00 | $14,560.00 | $15,465.00 | $44,060.00 |
| 3 | $10,545.00 | $15,065.00 | $3,380.00 | $28,990.00 |
| 4 | $11,905.00 | $13,940.00 | $8,025.00 | $33,870.00 |
| 5 | $12,450.00 | $17,455.00 | $23,245.00 | $53,150.00 |
| 6 | $10,995.00 | $10,170.00 | $15,550.00 | $36,715.00 |
| 7 | $16,090.00 | $8,250.00 | $11,125.00 | $35,465.00 |
| 8 | $9,790.00 | $12,455.00 | $14,715.00 | $36,960.00 |
| 9 | $6,320.00 | $9,975.00 | $7,325.00 | $23,620.00 |
| 10 | $15,355.00 | $13,315.00 | $17,910.00 | $46,580.00 |
| 11 | $9,700.00 | $15,200.00 | $10,020.00 | $34,920.00 |
| 12 | $12,400.00 | $12,070.00 | $20,220.00 | $44,690.00 |
| Grand Total | $143,515.00 | $155,580.00 | $156,905.00 | $456,000.00 |




**Findings:**

- When it comes to the purchase of beauty products, there are more women than men. However, for clothes and electronic products, there is no significant difference in purchasing behavior between male and female.
- People in the 35-44 age group market are significantly more likely to purchase clothing than beauty products and electronic products.
- Analysis of clothing purchasing behavior: As the age group grows, clothing purchases gradually increase and reach their peak in the age range of 35 to 44. Then, with further age growth, there is a downward trend in people's clothing purchases.
- For the analysis of clothing purchasing behavior, as the age group grows, clothing purchases gradually increase and reach their peak in the 45-54 age group. Then, as age further increases, people's purchases of electronic products show a downward trend.
- The company's revenue proportions in the three product types are basically the same, and there is no situation of over-reliance on any one type of product.
- The sales of beauty products remained stable throughout the year, the sales of clothing products showed a downward trend, and the sales of electronic

products showed an upward trend.

- At the monthly revenue level, the revenue of clothing products and beauty products generally tends to be stable, but the revenue of electronic products fluctuates greatly.

## Day 3: Task 1

Please download the dataset 'Day_3_Task_1_Bike_Sales_Pivot_Lab.xlsx' from here.

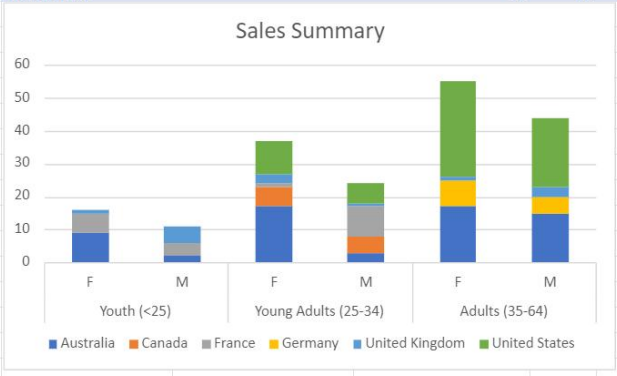
The lab instructions can be found here. Do not worry if you do not complete the lab, just working with data and playing with the pivot table will be good experience.

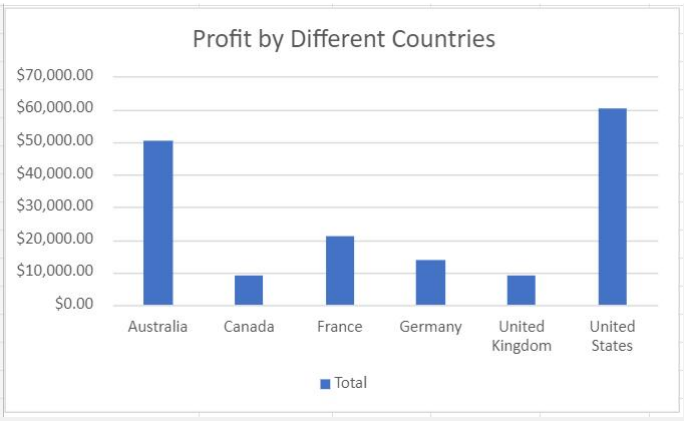
Please paste your final pivot table below and complete the reflection questions:

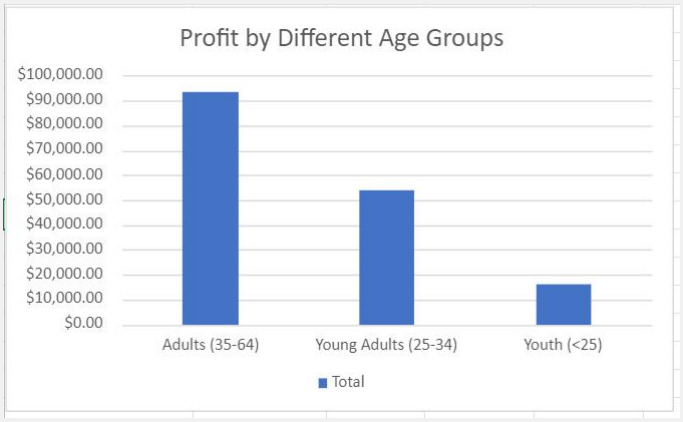
**Print screen 1**

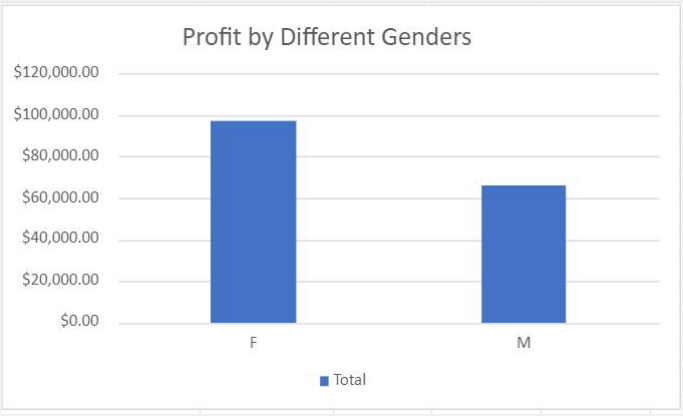
| Age_Group | Country_Updated | Sum of Order_Quantity | Sum of Profit |
|---|---|---|---|
| ⊟Youth (<25) | Australia | 11 | $2,755.00 |
| | France | 10 | $10,507.00 |
| | United Kingdom | 6 | $2,788.00 |
| **Youth (<25) Total** | | **27** | **$16,050.00** |
| ⊟Young Adults (25-34) | Australia | 20 | $18,639.00 |
| | Canada | 11 | $9,123.00 |
| | France | 10 | $10,474.00 |
| | United Kingdom | 4 | $2,090.00 |
| | United States | 16 | $13,636.00 |
| **Young Adults (25-34) Total** | | **61** | **$53,962.00** |
| ⊟Adults (35-64) | Australia | 32 | $28,932.00 |
| | Germany | 13 | $13,636.00 |
| | United Kingdom | 4 | $4,194.00 |
| | United States | 50 | $46,734.00 |
| **Adults (35-64) Total** | | **99** | **$93,496.00** |
| **Grand Total** | | **187** | **$163,508.00** |

| Sum of Order_Quantity | | Country_Updated | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Age_Group | Customer_Gender | Australia | Canada | France | Germany | United Kingdom | United States | Grand Total |
| ⊟Youth (<25) | F | 9 | | 6 | | 1 | | 16 |
| | M | 2 | | 4 | | 5 | | 11 |
| Youth (<25) Total | | 11 | | 10 | | 6 | | 27 |
| ⊟Young Adults (25-34 | F | 17 | 6 | 1 | | 3 | 10 | 37 |
| | M | 3 | 5 | 9 | | 1 | 6 | 24 |
| Young Adults (25-34) Total | | 20 | 11 | 10 | | 4 | 16 | 61 |
| ⊟Adults (35-64) | F | 17 | | | 8 | 1 | 29 | 55 |
| | M | 15 | | | 5 | 3 | 21 | 44 |
| Adults (35-64) Total | | 32 | | | 13 | 4 | 50 | 99 |
| Grand Total | | 63 | 11 | 20 | 13 | 14 | 66 | 187 |

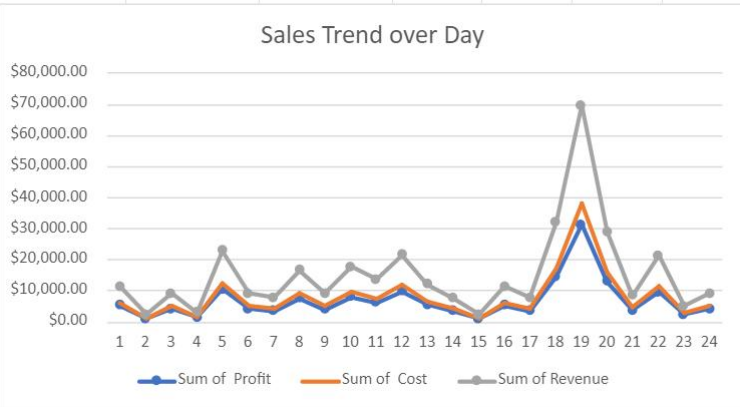
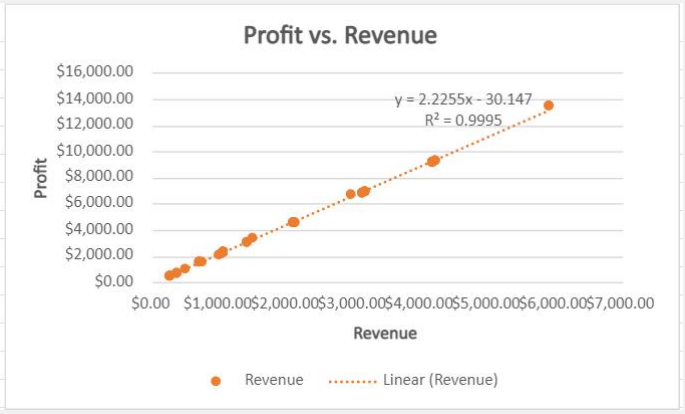





| | |
|---|---|
| **In which markets does Germany have customers ?** | From the pivot table, as we could see, in the market where the age group is Adults (35-64), there are orders for bike in Germany. Other than that, in markets of other age groups, there are no orders for bicycles in Germany. |
| **What country has sales in all** | Australia and the United Kingdom, cause they have order quantity records which aren't equal to 0 in all age groups. |

| | |
|---|---|
| **markets?** | |
| **What are the most profitable markets by country, age group, and gender?** | Based on the bar charts above, we could find that the United States is the most profitable markets by country, and adults (35-64) is the most profitable market by age group , while female is the most profitable market by gender. |
| **Any other findings?** |  <br>The overall profit in December was in a state of slight fluctuation before the 17th, but generally tended to be stable. However, during the days from the 17th to the 19th, the profit witnessed a rapid increase and reached the revenue peak on the 19th. As Christmas approaches, profits start to decline gradually. Although there is a slight increase in profits during the period from the 21st to the 22nd, the overall profits remain on a downward trend.<br>  <br>Profit and revenue show a positive correlation, that is, as revenue increases, profit will also increase. |

## Day 3: Task 2

The dataset below tracks the sales performance of different products in various counties in England. Please paste the dataset into a blank Excel workbook. Your task is to:

- **Create a Pivot Table** to summarise the data by county and product.
- **Use the SWITCH function** to categorise products based on their sales volume.

### *Dataset:*

| County | Product | Sales Volume |
|---|---|---|
| Yorkshire | Laptops | 500 |
| Yorkshire | Smartphones | 200 |
| Cornwall | Laptops | 700 |
| Cornwall | Printers | 400 |
| Lancashire | Smartphones | 150 |
| Lancashire | Laptops | 600 |
| Essex | Printers | 800 |
| Essex | Smartphones | 300 |
| Durham | Laptops | 250 |
| Durham | Printers | 300 |
| Greater Manchester | Smartphones | 600 |
| Greater Manchester | Laptops | 400 |

### *Step 1: Create a Pivot Table*

- Select the dataset (columns A to C).
- Insert a Pivot Table to summarise the data by **County** in the rows and **Products** in the columns. Use **Sales Volume** as the value to be summarised.

### *Step 2: Use the SWITCH Function*

In a new column next to your data, use the SWITCH function to categorise products based on **Sales Volume** as follows:

- For sales greater than 600: **"High"**
- For sales between 300 and 600: **"Medium"**
- For sales less than 300: **"Low"**

**SWITCH Function Example**:

```
=SWITCH(TRUE, C2 > 600, "High", C2 >= 300, "Medium", "Low")
```

- Apply this formula to each row, and check if the products are categorised correctly.

***Submission:***

- A completed Pivot Table summarising sales by county and product.
- A new column in the dataset categorising products by sales volume using the SWITCH function.
    - Please paste your completed work below

**Print screen 1**

| County | Product | Sales Volume | Sales Range_IFS | Switch2categories_Wrong | Switch2categories_Right |
|---|---|---|---|---|---|
| Yorkshire | Laptops | 500 | Between 300 and 600 | Medium | Medium |
| Yorkshire | Smartphones | 200 | Less than 300 | Low | Low |
| Cornwall | Laptops | 700 | More than 600 | High | High |
| Cornwall | Printers | 400 | Between 300 and 600 | Medium | Medium |
| Lancashire | Smartphones | 150 | Less than 300 | Low | Low |
| Lancashire | Laptops | 600 | More than 600 | Medium | High |
| Essex | Printers | 800 | More than 600 | High | High |
| Essex | Smartphones | 300 | Less than 300 | Medium | Low |
| Durham | Laptops | 250 | Less than 300 | Low | Low |
| Durham | Printers | 300 | Less than 300 | Medium | Low |
| Greater Manchester | Smartphones | 600 | More than 600 | Medium | High |
| Greater Manchester | Laptops | 400 | Between 300 and 600 | Medium | Medium |

| Sum of Sales Volume | Product | | | |
|---|---|---|---|---|
| County | Laptops | Printers | Smartphones | Grand Tot |
| Cornwall | 700 | 400 | 0 | 1100 |
| Durham | 250 | 300 | 0 | 550 |
| Essex | 0 | 800 | 300 | 1100 |
| Greater Manchester | 400 | 0 | 600 | 1000 |
| Lancashire | 600 | 0 | 150 | 750 |
| Yorkshire | 500 | 0 | 200 | 700 |
| **Grand Total** | **2450** | **1500** | **1250** | **5200** |

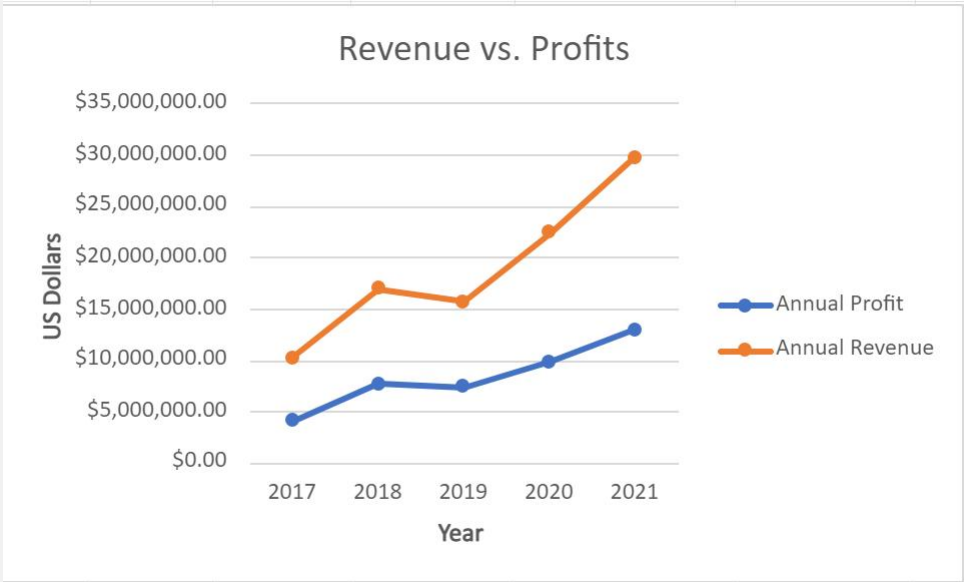
## Day 3: Task 3

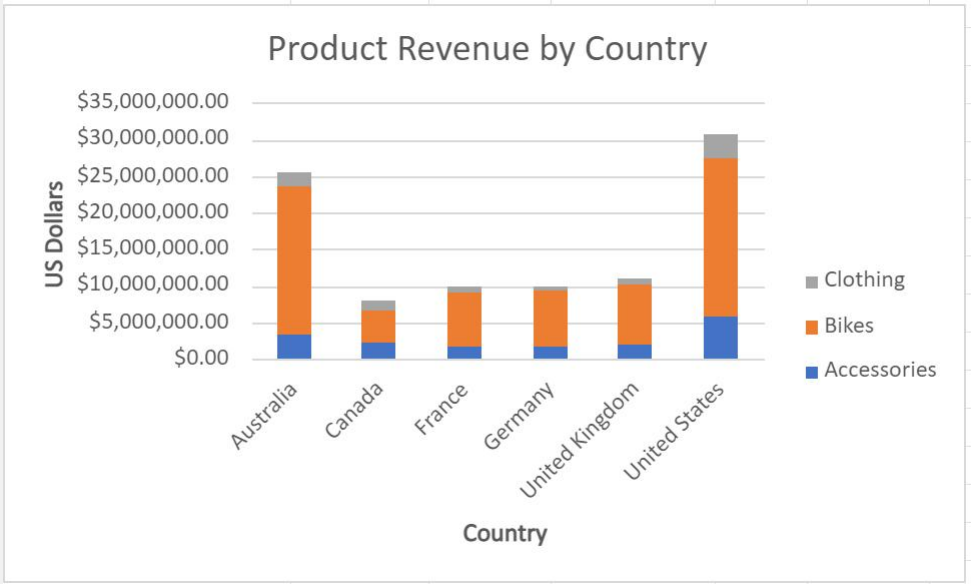
Please download the dataset 'Day_3_Task_3_Bike_Sales_Visualisations_Lab.xlsx' from here.

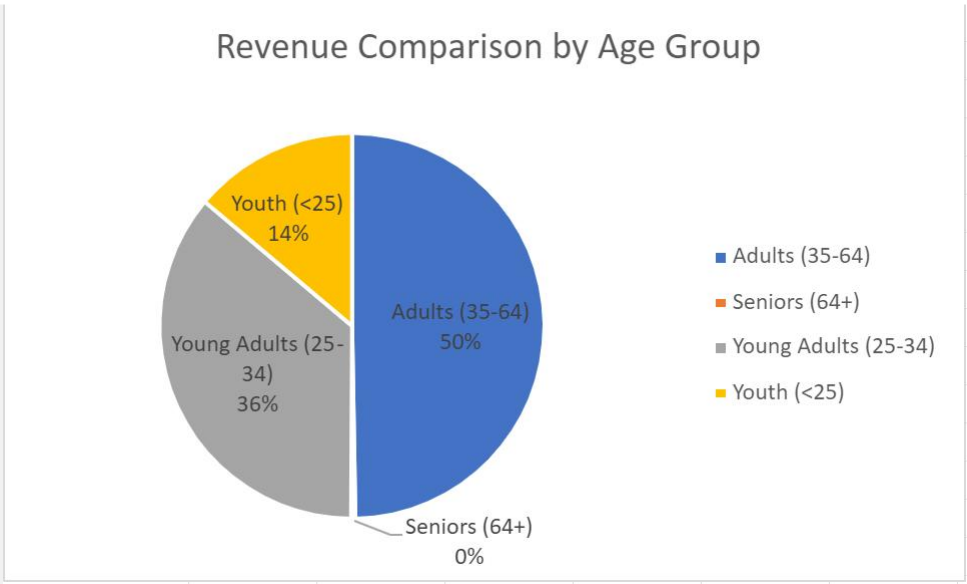
The lab instructions can be found here. Do not worry if you do not complete the lab, just working with data and playing with the charts will be good experience.

Please paste your results below:

**Print screen 1**




Revenue Comparison by Age Group
Youth (<25)
14%
Adults (35-64)
50%
Young Adults (25-34)
36%
Seniors (64+)
0%
Adults (35-64)
Seniors (64+)
Young Adults (25-34)
Youth (<25)

## Day 4: Task 1

You have been asked to deliver your analysis findings to the board of directors, with your analysis you have identified that customers are leaving your company at the 12-month point, this is typically when they receive their renewal price.

Conduct research and complete the below questions:

| | |
|---|---|
| **How would you prepare for the delivery?** | • **Data Collecting:** Collecting the related data which could be used for analyzing from different sources such like online platforms, user apps, web scraping data and stuff like that.<br>• **Data Cleansing:** Fixing or removing incorrect, corrupted, incorrectly formatted, duplicate, or incomplete data within a dataset. There are many opportunities for data to be duplicated or mislabeled, When combining multiple data sources, .<br>• **Data Verification:** Double-check churn metrics, ensure sample size is significant, and validate that the 12-month churn spike correlates with renewal pricing.<br>• **Segment Analysis:** Break down churn by customer type, pricing tier, region, or acquisition channel.<br>• **Hypothesis Testing:** Run statistical tests (e.g., t-test) to confirm that renewal price changes are statistically linked to increased churn.<br>• **Storyline Creation:** Structure the presentation as:<br>➢ As-is: What's happening (data pattern)<br>➢ As-is: Why it's happening (renewal price correlation)<br>➢ To-be: What we should do (data-driven solutions) |
| **What tools would you use for the delivery?** | • **Data Analysis Tools:**<br>➢ SQL for querying churn-related tables<br>➢ Python (pandas, seaborn/matplotlib) for EDA and visuals<br>➢ Excel for simple pivot analysis or for the simple |

| | |
|---|---|
| | dashboard<br>● **Visualization & Reporting:**<br>➢ Power BI for dashboards showing churn rates over time, by cohort<br>➢ PowerPoint for final board presentation with embedded visuals |
| **What is prospecting and why would you complete this before your delivery?** | ● Prospect data refers to information about potential customers or clients that can be used for sales and marketing purposes.<br>● As a data analyst, we should do data prospecting before the delivery that is because:<br>➢ Understanding the board's priorities (e.g., revenue growth, customer lifetime value)<br>➢ Identifying stakeholders who influence decisions on pricing/retention.<br>➢ This lets you focus your presentation on business outcomes of churn — not just raw data. |
| **Tell me best practices for public speaking and providing updates to senior leaders** | From my perspective, I think the best practices for public speaking and providing updates to senior leaders should follow the following 5 points:<br>● **Lead with insights:** "At the 12-month mark, churn increases by 34%, directly after price renewal notifications."<br>● **Keep visuals simple:** Use 1 graph per slide – e.g., a line graph showing churn by month, annotated at the 12-month point.<br>● **Be prepared with 2-3 key takeaways:** Don't overload with data.<br>● **Use executive-friendly language:** Instead of "95% confidence interval," say "the data strongly suggests..." |

| | |
|---|---|
| | • **End with clear next steps:** e.g., "A/B test new retention pricing by Q3." |
| **What will you show the board in your delivery?** | • **Churn Heatmap:** Monthly retention rate by cohort.<br>• **Line Graph:** % churn over 24 months, highlighting the 12-month spike.<br>• **Customer Survey Feedback:** Snippets showing dissatisfaction with renewal pricing.<br>• **Financial Impact:** Estimated revenue lost due to churn post-renewal.<br>• **Scenario Forecasts:** Predicted churn reduction if price changes or loyalty discounts are applied. |
| **How will you articulate the changes that are needed?** | • Show A/B test plan for different renewal prices<br>• Suggest a pilot program for high-risk cohorts<br>I would like to use the following sentences to illustrate something:<br>"The data shows a x% increase/decrease in churn at the 12-month renewal point. Customers who received a x% price increase/decrease are more likely to leave. We recommend introducing price anchoring, loyalty incentives, or testing personalized renewal rates. If we improve/reduce churn by just x%, we could retain/improve/loss £x in revenue annually." |
| **Provide a list of online resources and videos that will support your preparation for public speaking** | • **Storytelling with Data YouTube** – how to turn analytics into persuasive visuals<br>• **LinkedIn Learning** – Data Storytelling<br>• **Coursera** – Presentation Skills for Analysts<br>• **bilibili** – Chinese Special Online Platform contained many learning resources |
| **Evaluate tools that provide visualisation.** | |

**Tell me what they are.**

**Tell me what you would choose when delivering your presentation and why**

| Tool | Description | Why use it |
|---|---|---|
| **Power BI** | Dashboard tool with filters and drilldowns | Great for interactive visual storytelling at executive level |
| **Tableau** | Advanced dashboard tool for complex datasets | Strong at trend analysis, great for churn segmentation |
| **Excel** | Quick, manual charts | Good for fast visuals or backup handouts |
| **PowerPoint** | Presentation software that allows users to create engaging slideshows for communication purposes | Present customer feedback quotes and summarize key actions for decision-makers |

When delivering my presentation, I'd use:

- **Power BI**: To show interactive churn analysis, filters by segment
- **PowerPoint**: Embed key visuals for clear storytelling

## Course Notes

It is recommended to take notes from the course, use the space below to do so, or use the revision guide shared with the class:

We have included a range of additional links to further resources and information that you may find useful, these can be found within your revision guide.

**END OF WORKBOOK**

**Please check through your work thoroughly before submitting and update the table of contents if required.**

**Please send your completed work booklet to your trainer.**