

# Overview

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Donnerstag, 3. Juli 2025 18:06

## Module 1: Ask effective questions

Data analysts are constantly asking questions in order to find solutions and identify business potential. In this part of the course, you'll learn about effective questioning techniques that will help guide your analysis.

## Module 2: Make data-driven decisions

In analytics, data drives decision-making, and this is your opportunity to explore data of all kinds and its impact on all sorts of business decisions. You'll also learn how to effectively share your data through reports and dashboards.

## Module 3: Spreadsheet magic

Spreadsheets are a key data analytics tool. Here you'll learn both why and how data analysts use spreadsheets in their work. You'll also investigate how structured thinking helps analysts understand problems and come up with solutions.

## Module 4: Always remember the stakeholder

Successful data analysts balance the needs and expectations of their team and the stakeholders they support. In this part of the course, you'll learn strategies for managing stakeholder expectations while establishing clear communication with your team.

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## 6 Data Analysis Phases

Donnerstag, 3. Juli 2025 18:06

### Example of Anywhere Gaming Repair

↳ wants ads to expand business

↳ must make sense (*like cooking school for cooking ads*)

### Problem Formulation

↳ determine what advertising method is best for reaching

Anywhere Gaming Repair's target audience

### Target Audience

↳ specific people you're trying to communicate with



#### Step 1: Ask

It's impossible to solve a problem if you don't know what it is. These are some things to consider:

- Define the problem you're trying to solve
- Make sure you fully understand the stakeholder's expectations
- Focus on the actual problem and avoid any distractions
- Collaborate with stakeholders and keep an open line of communication
- Take a step back and see the whole situation in context

#### Questions to ask yourself in this step:

1. What are my stakeholders saying their problems are?
2. Now that I've identified the issues, how can I help the stakeholders resolve their questions?



#### Step 2: Prepare

You will decide what data you need to collect in order to answer your questions and how to organize it so that it is useful. You might use your business task to decide:

- What metrics to measure
- Locate data in your database
- Create security measures to protect that data

#### Questions to ask yourself in this step:

1. What do I need to figure out how to solve this problem?
2. What research do I need to do?



#### Step 3: Process

Clean data is the best data and you will need to clean up your data to get rid of any possible errors, inaccuracies, or inconsistencies. This might mean:

- Using spreadsheet functions to find incorrectly entered data
- Using SQL functions to check for extra spaces
- Removing repeated entries
- Checking as much as possible for bias in the data

#### Questions to ask yourself in this step:

1. What data errors or inaccuracies might get in my way of getting the best possible answer to the problem I am trying to solve?
2. How can I clean my data so the information I have is more consistent?



#### Step 4: Analyze

You will want to think analytically about your data. At this stage, you might sort and format your data to make it easier to:

- Perform calculations
- Combine data from multiple sources
- Create tables with your results

#### Questions to ask yourself in this step:

1. What story is my data telling me?
2. How will my data help me solve this problem?
3. Who needs my company's product or service? What type of person is most likely to use it?



Datei aStep 5: Share

Everyone shares their results differently so be sure to summarize your results with clear and enticing visuals of your analysis using data via tools like graphs or dashboards. This is your chance to show the stakeholders you have solved their problem and how you got there. Sharing will certainly help your team:

- Make better decisions
- Make more informed decisions
- Lead to stronger outcomes
- Successfully communicate your findings

Questions to ask yourself in this step:

1. How can I make what I present to the stakeholders engaging and easy to understand?
2. What would help me understand this if I were the listener?



Act

Step 6: Act

Now it's time to act on your data. You will take everything you have learned from your data analysis and put it to use. This could mean providing your stakeholders with recommendations based on your findings so they can make data-driven decisions.

Questions to ask yourself in this step:

1. How can I use the feedback I received during the share phase (step 5) to actually meet the stakeholder's needs and expectations?

These six steps can help you to break the data analysis process into smaller, manageable parts, which is called **structured thinking**. This process involves four basic activities:

1. Recognizing the current problem or situation
2. Organizing available information
3. Revealing gaps and opportunities
4. Identifying your options

When you are starting out in your career as a data analyst, it is normal to feel pulled in a few different directions with your role and expectations. Following processes like the ones outlined here and using structured thinking skills can help get you back on track, fill in any gaps and let you know exactly what you need.

## 6 Problem Types (Video)

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### The 6 Types of Problems

#### **Making Predictions**

- ↳ using data to make an informed decision about how things may be in the future
- ↳ e.g. remote health gadget for chr. sick people at home

#### **Categorising Things**

- ↳ assigning information to different groups or clusters based on common features
- ↳ putting things into categories for easier comparing

#### **Spotting Something Unusual**

- ↳ identifying data that is different from the norm
- ↳ school system - sudden increase in number of student
- ↳ data analyst find out - many new buildings around built

#### **Identifying Themes**

- ↳ grouping categorised information into broader concepts
- ↳ separating workers into groups (*theme*)
- ↳ separating workers into low and high productivity
- ↳ putting both together to see more/less productive themes

#### **Discovering Connections**

- ↳ finding similar challenges faced by different entities and combining data and insights to address them
- ↳ companies cross over problems
- ↳ the problems are connected to each other
- ↳ sharing data openly would allow collaboration

#### **Finding Patterns**







- ↳ using historical data to understand what happened in the past and is therefore likely to happen again
- ↳ e.g. When do people buy what more?

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# 6 Problem Types (Short)

Donnerstag, 3. Juli 2025 18:06

Overview

<p>1. Making predictions</p> 	<p>2. Categorizing things</p> 	<p>3. Spotting something unusual</p> 
<p>4. Identifying themes</p> 	<p>5. Discovering connections</p> 	<p>6. Finding patterns</p> 

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# SMART Questions

Donnerstag, 3. Juli 2025 18:06

## Leading Question (X)

- ↳ leading the answer into a certain way
- ↳ less possibilities to give good answers

## Closed-Ended Questions (X)

- ↳ can be answered by yes or no
- ↳ less opportunities to get more information
- ↳ too vague and lacks context

## Vague Questions

- ↳ questions not specific or without providing context

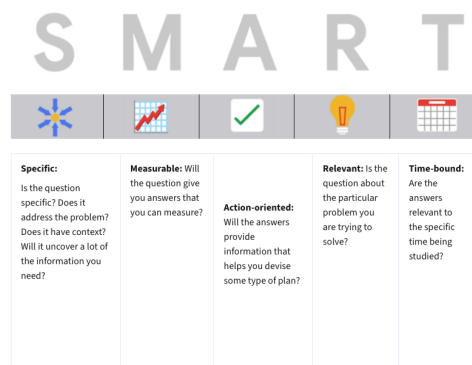
## SMART - Methodology

Specific  
Measurable  
Action-oriented  
Relevant  
Time-bound

## Fairness

- ↳ ensuring that questions don't create or reinforce bias

Highly effective questions are SMART questions:



Questions should be open-ended. This is the best way to get responses that will help you accurately qualify or disqualify potential solutions to your specific problem. So, based on the thought process, possible SMART questions might be:

## Exercise - maybe not unimportant

### The Scenario

You are three weeks into your new job as a junior data analyst. The company you work for has just collected data on their weekend sales. Your manager asks you to perform a thorough exploration of this data. To get this project started, you must ask some questions and get some information.

### Consider

Based on the SMART framework, which questions are most important to ask?  
How will these questions clarify the requirements and goals for the project?  
How does asking detailed, specific questions benefit you when planning for a project? Can vague or unclear questions harm a project?

### The Question

Now, write 2-3 sentences (40-60 words) in response to each of these questions. Enter your response in the text box below.

### As a refresher, SMART questions are

#### Specific

Questions are simple, significant, and focused on a single topic or a few closely related ideas.

#### Measurable

Questions can be quantified and assessed.

#### Action-oriented

Questions encourage change.

#### Relevant

Questions matter, are important, and have significance to the problem you're trying to solve.

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Questions specify the time to be studied.

### **Some common topics for questions include**

Objectives, Audience, Time, Resources, Security

### **Answer**

Here are a few questions you might want to ask:

01 When is the project due?

02 Are there any specific challenges to keep in mind?

03 Who are the major stakeholders for this project,  
and

what do they expect this project to do for them?

04 Who am I presenting the results to?

### **Examples of Questions**

#### Objectives

What are the goals of the deep dive? What, if any, questions are expected to be answered by this deep dive?

#### Audience

Who are the stakeholders? Who is interested or concerned about the results of this deep dive? Who is the audience for the presentation?

#### Time

What is the time frame for completion? By what date does this need to be done?

#### Resources

What resources are available to accomplish the deep dive's goals?

#### Security

Who should have access to the information?

### Summary

These questions can help you focus on techniques and analyses that produce results of interest to stakeholders.

They also clarify the deliverable's due date, which is important to know so you can manage your time effectively.

When you start work on a project, you need to ask questions that align with the plan and the goals and help you explore the data.

The more questions you ask, the more you learn about your data, and the more powerful your insights will be.

Asking thorough and specific questions means clarifying details until you get to concrete requirements.

With clear requirements and goals, it's much easier to plan and execute a successful data analysis project and avoid time-consuming problems down the road.



# Glossary

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Donnerstag, 3. Juli 2025 18:06

## Terms and definitions for Course 2, Module 1

**Action-oriented question:** A question whose answers lead to change

**Cloud:** A place to keep data online, rather than a computer hard drive

**Data analysis process:** The six phases of ask, prepare, process, analyse, share, and act whose purpose is to gain insights that drive informed decision-making

**Data life cycle:** The sequence of stages that data experiences, which include plan, capture, manage, analyse, archive, and destroy

**Leading question:** A question that steers people toward a certain response

**Measurable question:** A question whose answers can be quantified and assessed

**Problem types:** The various problems that data analysts encounter, including categorizing things, discovering connections, finding patterns, identifying themes, making predictions, and spotting something unusual

**Relevant question:** A question that has significance to the problem to be solved

**SMART methodology:** A tool for determining a question's effectiveness based on whether it is specific, measurable, action-oriented, relevant, and time-bound

**Specific question:** A question that is simple, significant, and focused on a single topic or a few closely related ideas

**Structured thinking:** The process of recognizing the current problem or situation, organizing available information, revealing gaps and opportunities, and identifying options

**Time-bound question:** A question that specifies a timeframe to be studied

**Unfair question:** A question that makes assumptions or is difficult to answer honestly

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