

Cracking the PM interview 🚀

How to approach guesstimate questions?

Guesstimate problems

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Guesstimate questions often involve making educated guesses to estimate a quantity or value.

Two primary approaches to tackle such questions are the bottom-up approach and the top-down approach.

When solving guesstimate questions, you can adopt either a bottom-up or top-down approach, each with its distinct methodology and application. Understanding when and how to use these approaches can significantly enhance the accuracy and efficiency of your estimations.

Each has its advantages and limitations, and the choice between them can depend on the nature of the problem, the availability of data, and personal preference.

Bottom-up approach

Bottom-up approach (1/2)

The bottom-up approach starts with the most fundamental units of the problem and aggregates them to build up to the final estimate.

It involves identifying the smallest components or variables that contribute to the quantity being estimated and then summing them up.

It starts with the most granular details or components of a problem and aggregates them to arrive at a total estimate. This method is particularly useful when you have access to, or can reasonably estimate, the individual components that make up the larger entity being analyzed. It's a methodical approach that can provide a high degree of accuracy because it's grounded in specific, often verifiable elements.

Steps:

1. **Identify Components:** Break down the problem into its smallest reasonable components.
2. **Estimate Each Component:** Estimate the value or quantity of each component individually. These estimates can be based on known data, benchmarks, or logical assumptions.
3. **Aggregate Estimates:** Sum up the estimates of all components to get the total estimate.

Bottom-up approach (1/2)

Example 1: Estimating the total revenue of a movie theater in a day:

- Start by estimating the number of shows per day.
- Estimate the average number of attendees per show.
- Estimate the average ticket price.
- Calculate the total revenue by multiplying the number of shows, the number of attendees per show, and the average ticket price.

Example 2: Estimating the number of mobile phones sold in a city in a month:

- Estimate the number of mobile phone stores in the city.
- Estimate the average number of mobile phones each store sells in a month.
- Multiply the number of stores by the average number of phones sold per store to get the total sales.

Pros:

- **Accuracy:** Can lead to more accurate estimates if the base assumptions are correct and the components are well-understood.
- **Detail-Oriented:** Forces you to consider and account for all elements of the problem.

Cons:

- **Time-Consuming:** Requires detailed analysis and estimation of each component, which can be time-intensive.
- **Data Requirements:** Needs more specific data about components, which might not always be available.

Top-down approach

Top-down approach (1/2)

The top-down approach starts with a broad overall estimate or known total from which you derive the specific quantity of interest.

It involves using high-level data to break down into smaller segments until the specific estimate is reached.

In other words, the top-down approach begins with the broadest or most general level of information and then narrows down to the specific target of the estimation.

This approach often relies on identifying a large, encompassing metric or total from which you can derive a portion or segment that represents your specific estimate.

It's useful when you have overarching data or when the bottom-up approach is impractical due to complexity or lack of granular data.

Steps:

1. **Identify a Broad Metric:** Choose a broad, encompassing metric that is related to the target of your estimate and for which data is available or can be estimated.
2. **Determine the Proportion:** Estimate what proportion of this broad metric can be attributed to the specific component or aspect you're trying to estimate.
3. **Apply the Proportion:** Apply this proportion to the broad metric to derive the estimate for your specific target.

Top-down approach (1/2)

Example 1: Estimating the number of bicycles sold in a country in a year:

- Start with the total population of the country.
- Estimate the percentage of the population likely to buy a bicycle in a year.
- Calculate the total number of bicycles sold by applying the percentage to the total population.

Example 2: Estimating the total coffee consumption in an office in a month:

- Start with the total number of employees in the office.
- Estimate the average number of coffee cups consumed by an employee in a day.
- Multiply the total number of employees by the average consumption and then by the number of working days in a month.

Pros:

- **Speed:** Generally faster than the bottom-up approach as it relies on broader estimates and fewer detailed calculations.
- **High-Level Understanding:** Useful for getting a quick, high-level estimate when detailed data is not available.

Cons:

- **Accuracy:** Can be less accurate, especially if the initial assumptions or high-level data are not representative of the specific scenario.
- **Oversimplification:** Might oversimplify the complex problems and miss out on specific factors that could significantly impact the estimate.

Conclusion

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The choice between a bottom-up and top-down approach depends on several factors, including the availability of data, the complexity of the problem, and the level of accuracy required.

Bottom-up is preferred when detailed data is accessible, and a high degree of accuracy is desired.

Top-down is suited for when overarching data is more readily available or when making broader market or industry-level estimations.

In practice, people often combine both approaches, using one to validate or refine the estimates obtained from the other, thereby leveraging the strengths of each to arrive at a more robust and credible guesstimate.

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