

Problem Solving

A Step by Step guide to General Problem Solving

WEB PROGRAMMING FUNDAMENTALS

web design and development
full sail university





Why is it important?

Problem-solving is the core skill of every developer

- Creating solutions
- Learning new technologies
- Integrating new technologies together
- Debugging and problem solving someone else's code.



The Process

1. Define the problem
2. Break the problem apart into smaller problems.
3. Identify potential solutions
4. Evaluate the potential solutions to select the best one
5. Develop an action plan to implement the best solution.

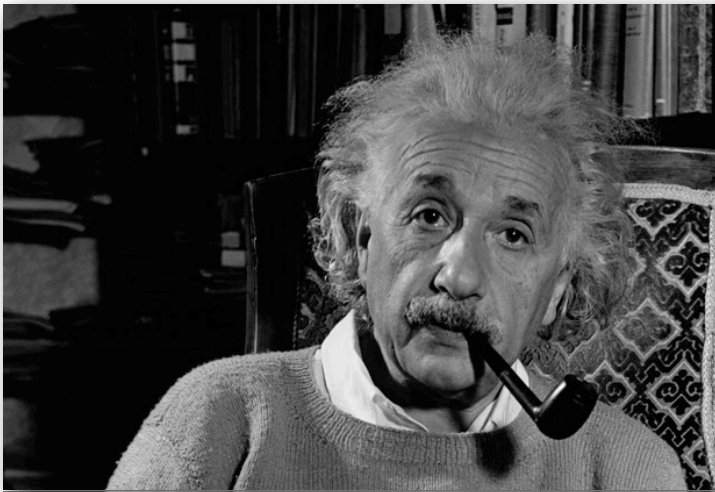


1. Define the problem

Knowing the problem,
inside and out is half the
battle.



Define the problem



"If I had an hour to solve a problem, I'd spend 55 minutes on the problem and 5 on the solution"

- Albert Einstein



Define the problem



"A problem well put
is half-solved"

- John Dewey



Define the problem

- Knowing the problem, inside and out is 50% of solving it.
- What are the assumptions being made?
- What are the parameters or constraints of the problem?
- What goals are we trying to meet?



Define the problem

- Ways to better understand the problem:
- Try visualizing and drawing out the problem on paper.
- Describe the problem in your own words



2. Choose the part to solve

Any large problem can be broken down into smaller problems



Choose the part to solve

- Ways to break apart a problem:
 - Identify the main goal of the problem. Then, identify sub-goals.
 - Identify the constraints for each sub-goal.



3. Identifying potential solutions

There is almost always more than one way to solve a problem.



Identify potential solutions

- Ways to break identify potential solutions:
 - Look at the sub-problems to see if you can create solutions for them.
 - Can you generalize to make the solution work for the whole problem?
 - Don't worry whether or not they actually work yet. We'll test them out later



4. Evaluate the solutions

Does it work? Does it work
for all of them?



4. Evaluate potential solutions

- Evaluating potential solutions:
 - Does the solution meet the goals?
 - Does the solution work for all cases?
 - There may be more than one solution. Rank them to see which works best.



5. Implementing the solution

- How will it work?
- Test, test, test, test, test!



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