

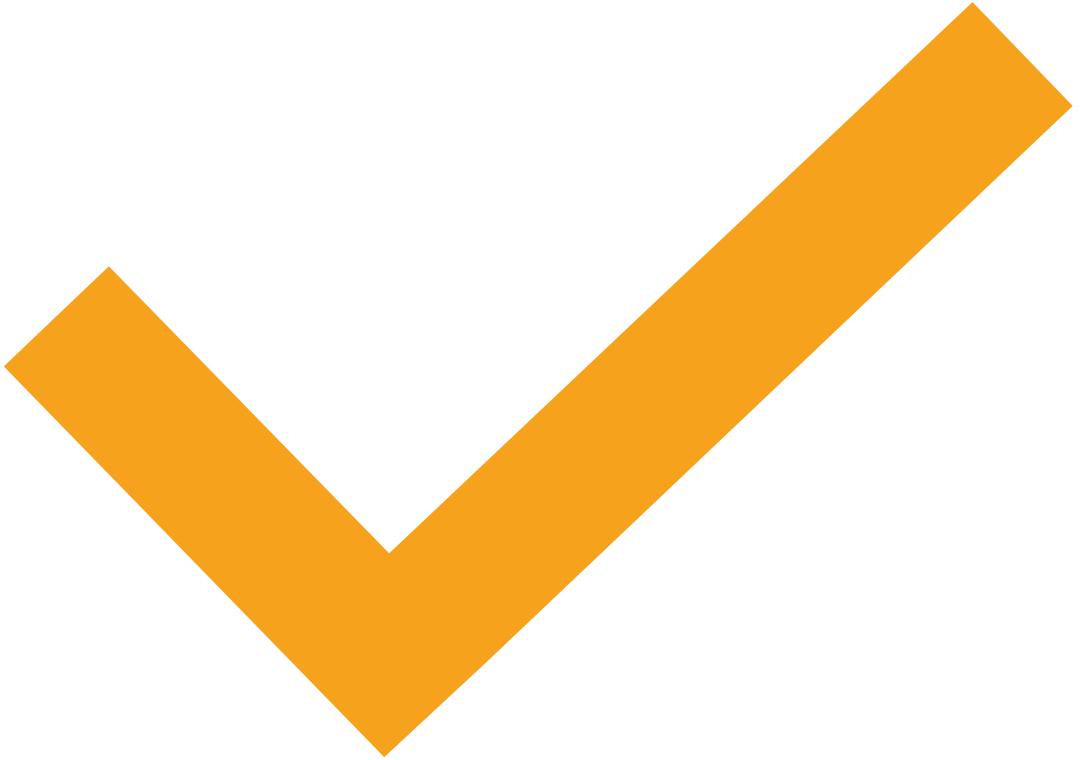
INTRODUCTION TO SOFTWARE BUSINESS PRODUCT MANAGEMENT

Week 1 Day 2

Led by: Emily Crose

for

Oakland University



DAY I RECAP

QUESTION OR
CLARIFICATIONS?



PROGRAMMING CORE CONCEPTS

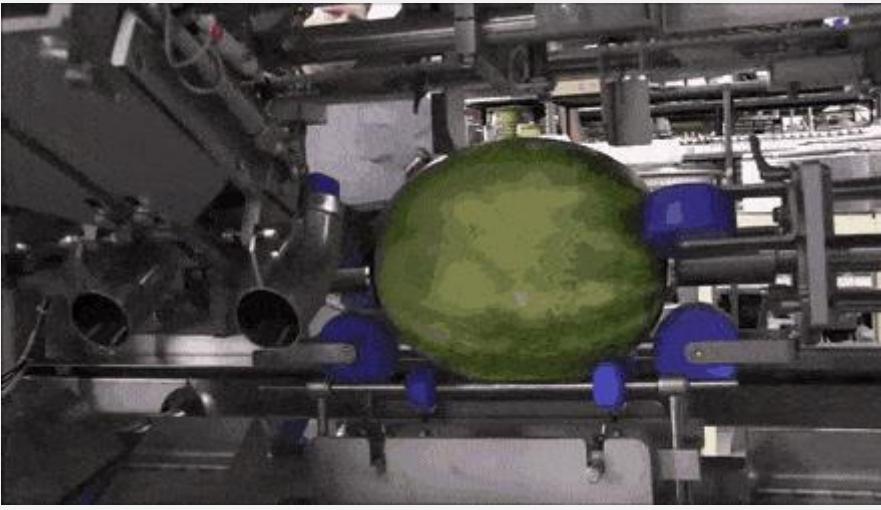
- Source code
 - We develop the program's source code
- Program execution
 - The program's operation is transferred to memory and runs
- Routines
 - Processes that a program will execute
- Compiling
 - Building an executable binary





MANUAL VS. AUTOMATION





WHAT IS PROGRAMMING?

int("please select exactly one object")

- OPERATOR CLASSES -

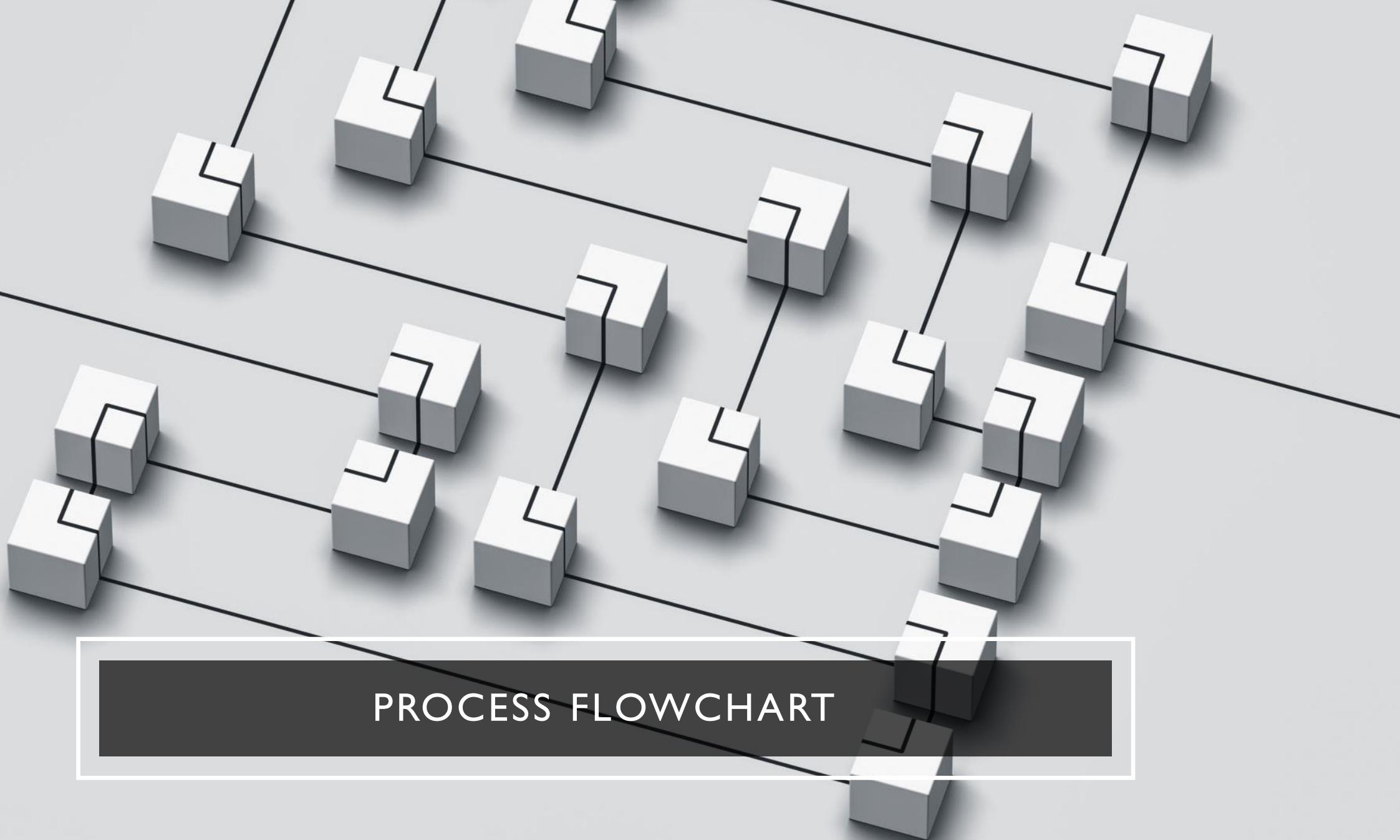
types.Operator:
X mirror to the selected object.mirror_mirror_x"
mirror X"

WHAT IS PROGRAMMING?



ORGANIZING PROGRAM OPERATIONS





“PSEUDO”CODE

PSEUDOCODE EXAMPLE

NOT BAD

```
FOR X = 1 to 10
  FOR Y = 1 to 10
    IF gameBoard[X][Y] = 0
      Do nothing
    ELSE
      CALL theCall(X, Y) (recursively)
      counter += 1
    END IF
  END FOR
END FOR
```

GOOD

```
SET moveCount to 1
FOR each row on the board
  FOR each column on the board
    IF gameBoard position (row, column) is occupied THEN
      CALL findAdjacentTiles with row, column
      INCREMENT moveCount
    END IF
  END FOR
END FOR
```

PSEUDOCODE EXAMPLE

DEPENDENCIES



PYTHON LIBRARIES AS DEPENDENCIES

```
1 import os
2 import socket
3 import warnings
4 from functools import update_wrapper
5 from threading import RLock
6
7 import werkzeug.utils
8 from werkzeug.exceptions import NotFound
9 from werkzeug.routing import BuildError
10 from werkzeug.urls import url_quote
11
12 from .globals import _app_ctx_stack
13 from .globals import _request_ctx_stack
14 from .globals import current_app
15 from .globals import request
16 from .globals import session
17 from .signals import message_flashed
18
```

LIBRARIES AND YOU

People who
use libraries



People who
make
libraries



Python

Python Standard Libraries

math

math
statistics
random

File system

os.path
fileinput
gzip
zipfile

Data types

collections
array
datetime
calendar

Text processing

string
re
readline

File formats

configparser
csv

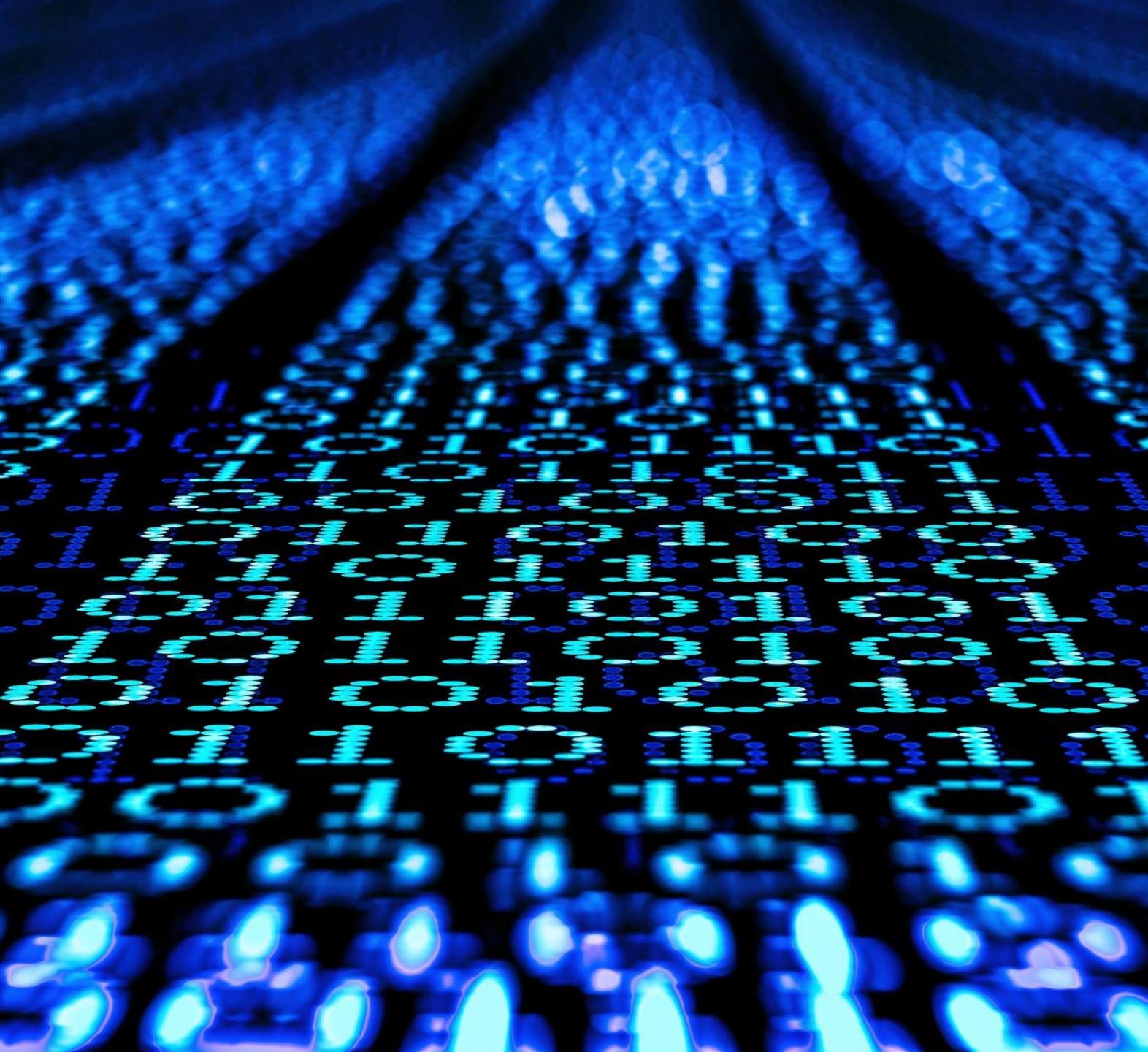
Operating System

platform
os
io

SOFTWARE BILL OF MATERIALS (SBOM)



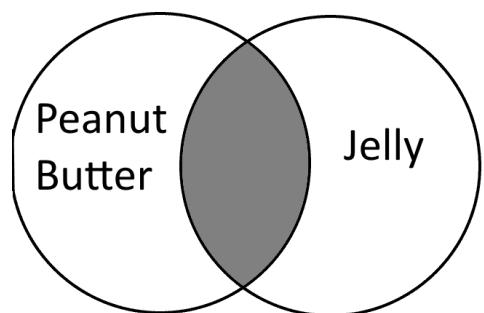
PROGRAM FACETS



BOOLEAN

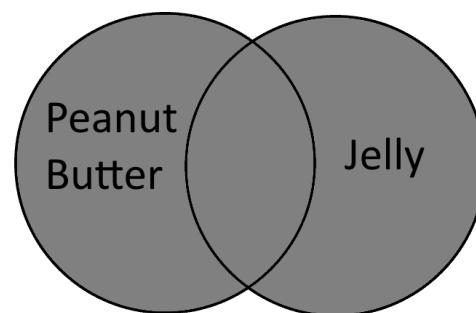


LOGICAL OPERATIONS



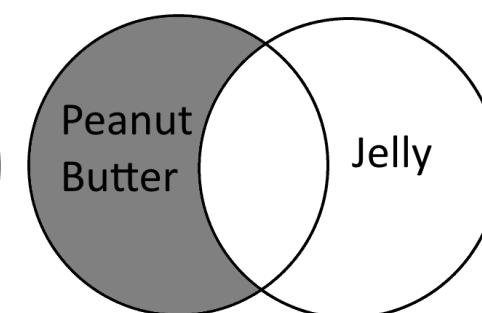
AND

Using AND, this search would only retrieve results with Peanut Butter and Jelly.



OR

Using OR, this search would retrieve results with peanut butter, with jelly, and with both.



NOT

Using NOT, this search would retrieve results with peanut butter, and exclude those with jelly or PB with jelly.

Operator	Description
<code>&&</code>	AND
<code> </code>	OR
<code>!</code>	NOT
<code>!=</code>	NOT EQUAL TO
<code>&</code>	BITWISE AND
<code> </code>	BITWISE OR
<code>^</code>	BITWISE XOR
<code>&=</code>	AND EQUAL
<code> =</code>	OR EQUAL
<code>^=</code>	XOR EQUAL

10 MINUTE BREAK



VARIABLES

```
<!DOCTYPE html>
<html>
<head>
<style>
:root {
    --blue: #1e90ff;
    --white: #ffffff;
    --width: 300px;
    --height: 300px;
}

body {
    background-color: var(--blue);
}

h2 {
    border-bottom: 2px solid var(--blue);
}

.container {
    color: var(--blue);
    background-color: var(--white);
    padding: 15px;
    width: var(--width);
    height: var(--height);
}

button {
    background-color: var(--white);
    color: var(--blue);
    border: 1px solid var(--blue);
    padding: 5px;
}
</style>
</head>
<body>
```

Declaring CSS Variables

Using variables

NAMING VARIABLES



Giving them meaningful names, according to their use.



Giving them the most compact names possible, for less storage usage.

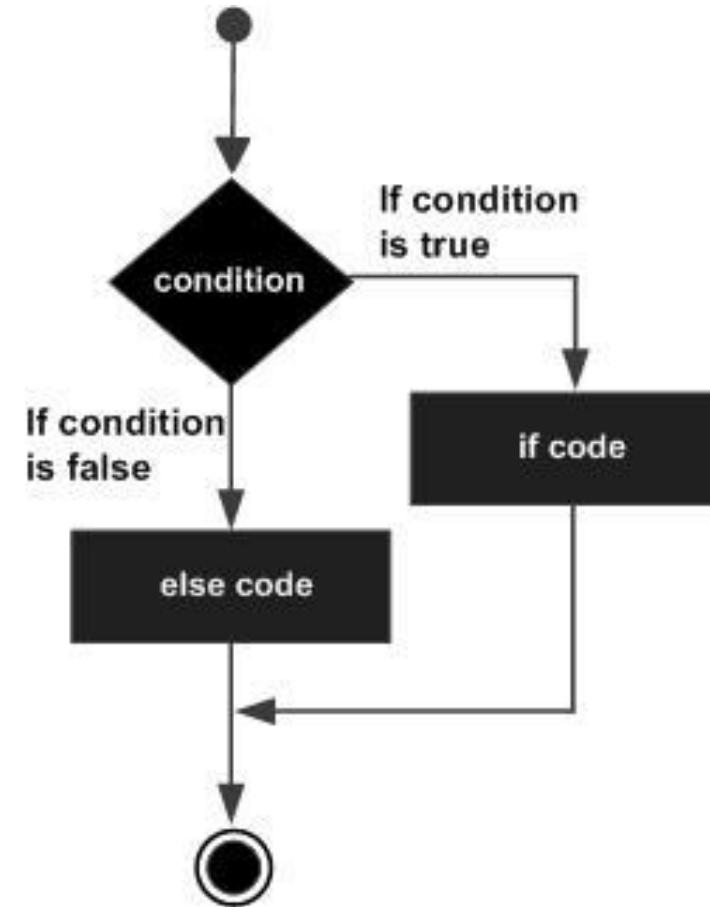


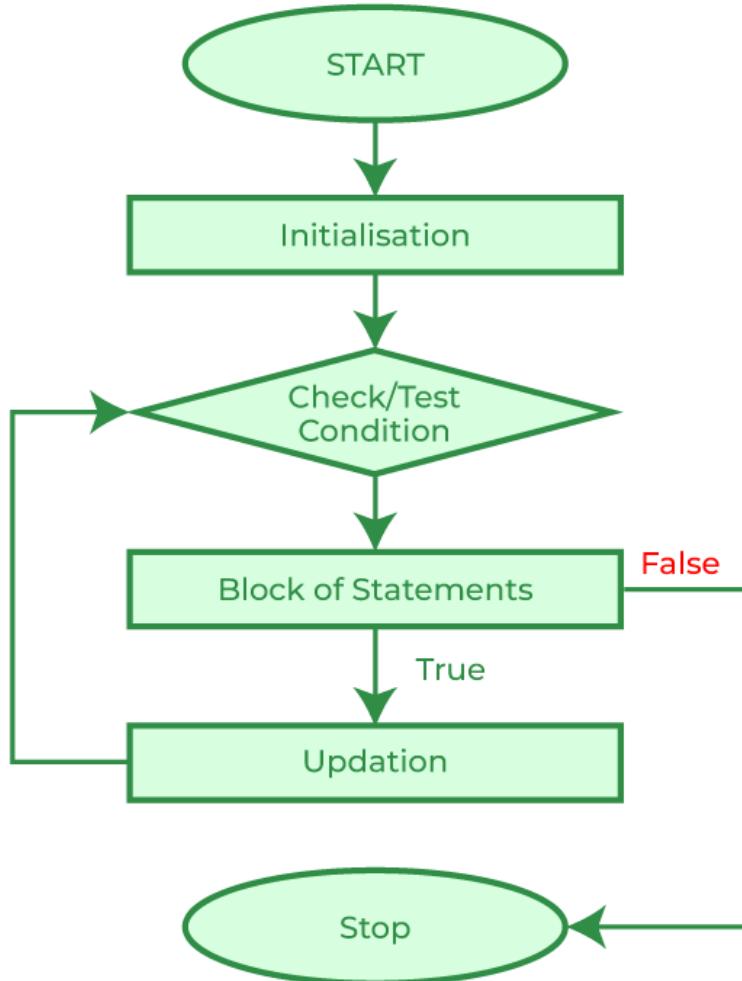
Giving them random names like "ahshjdn" or "yeetus".

LOOPS



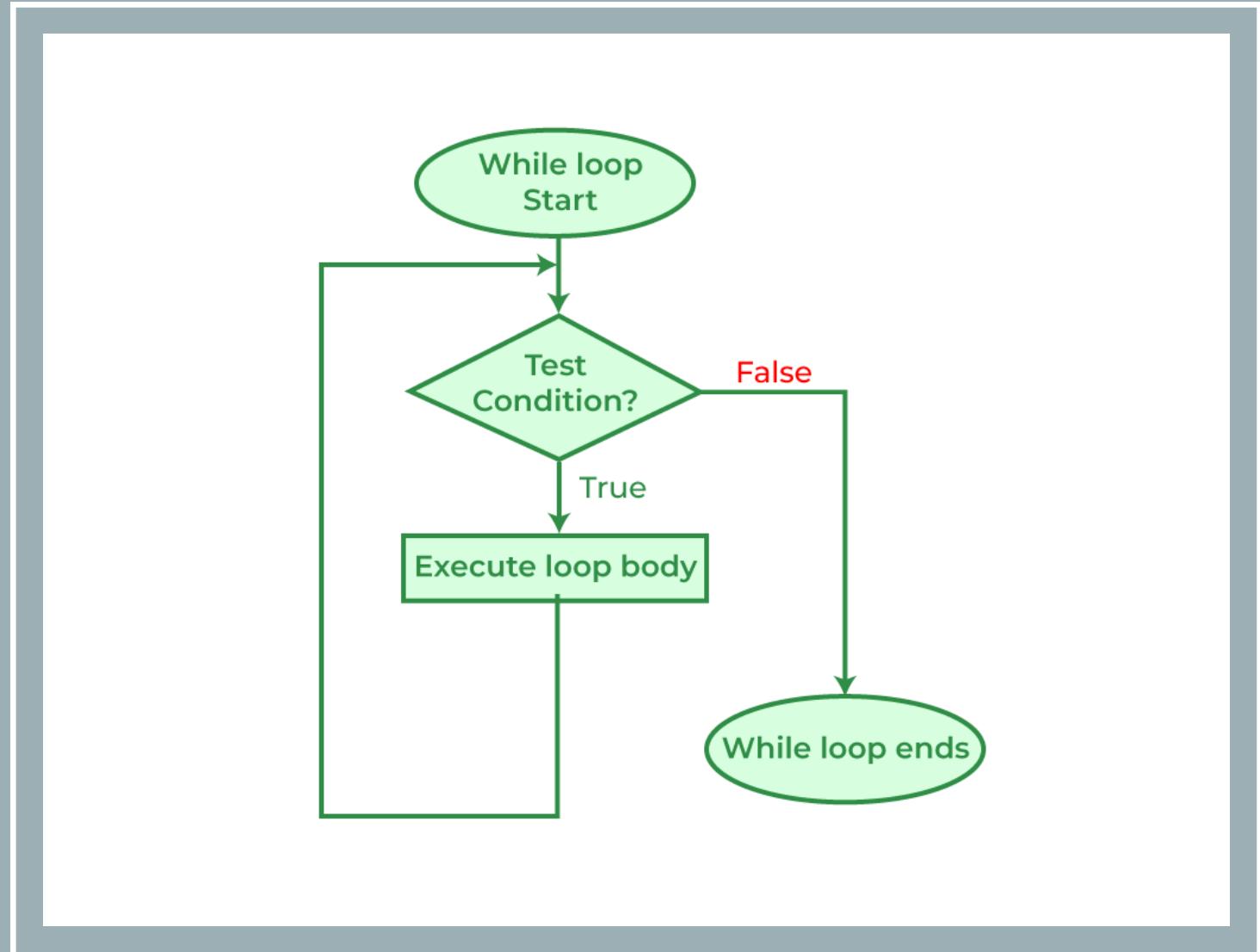
IF/ELSE LOOP





FOR LOOP

WHILE LOOP



NESTED LOOPS

```
for i = 1 to 9
    for j = 1 to 9
        matrix(i,j) = i*j;
    end
end

// The result of this code is that a matrix variable with
// have 9 rows and 9 column (81 buckets), and every row,col
// will contain its multiplication value, such as:

//   | 1  2  3  4  5  6  7  8  9
// ---+-----
// 1 |  1  2  3  4  5  6  7  8  9
// 2 |  2  4  6  8 10 12 14 16 18
// 3 |  3  6  9 12 15 18 21 24 27
// 4 |  4  8 12 16 20 24 28 32 36
// 5 |  5 10 15 20 25 30 35 40 45
// 6 |  6 12 18 24 30 36 42 48 54
// 7 |  7 14 21 28 35 42 49 56 63
// 8 |  8 16 24 32 40 48 56 64 72
// 9 |  9 18 27 36 45 54 63 72 81
```

CASE STATEMENTS

```
43 # Set flags.
44 while getopts "ahk:c:u:l:" FLAG
45 do
46     case $FLAG in
47         a)
48             AWS=1
49             ;;
50         k)
51             KEY="$OPTARG"
52             ;;
53         c)
54             HOST=$OPTARG
55             ;;
56         u)
57             USERC2=$OPTARG
58             ;;
59         l)
60             USERLOCAL=$OPTARG
61             ;;
62         h)
63             echo "$USAGE"
64             exit
65             ;;
66             echo "$USAGE"
67             exit
68             ;;
69         esac
70     done
71
```



MODERN SOFTWARE DEVELOPMENT CONCEPTS



WHY WOULD WE MAKE AN APP?

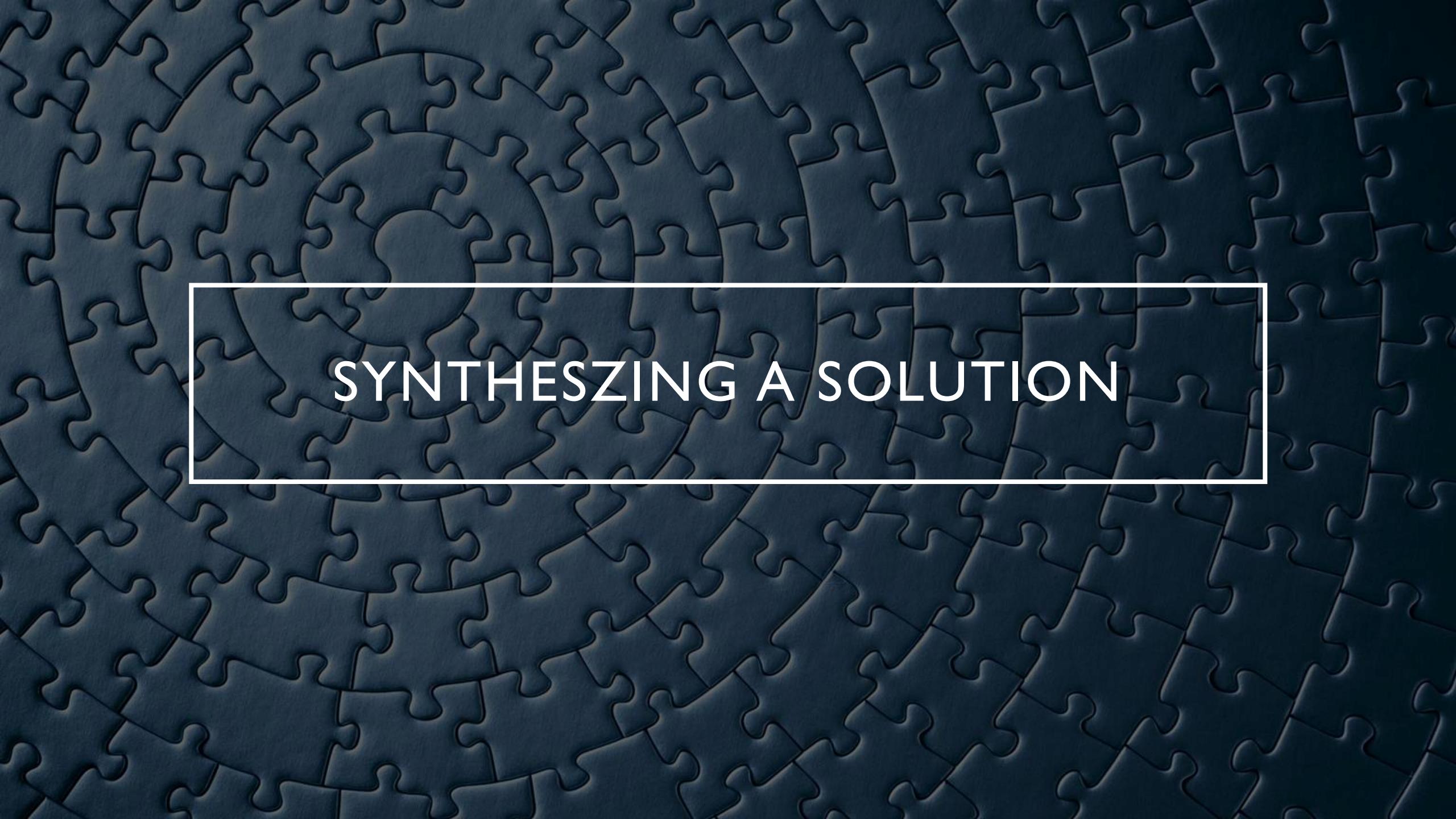
WHAT IS THE PROBLEM?

- What problems does this app solve?
- How does it solve these problems?



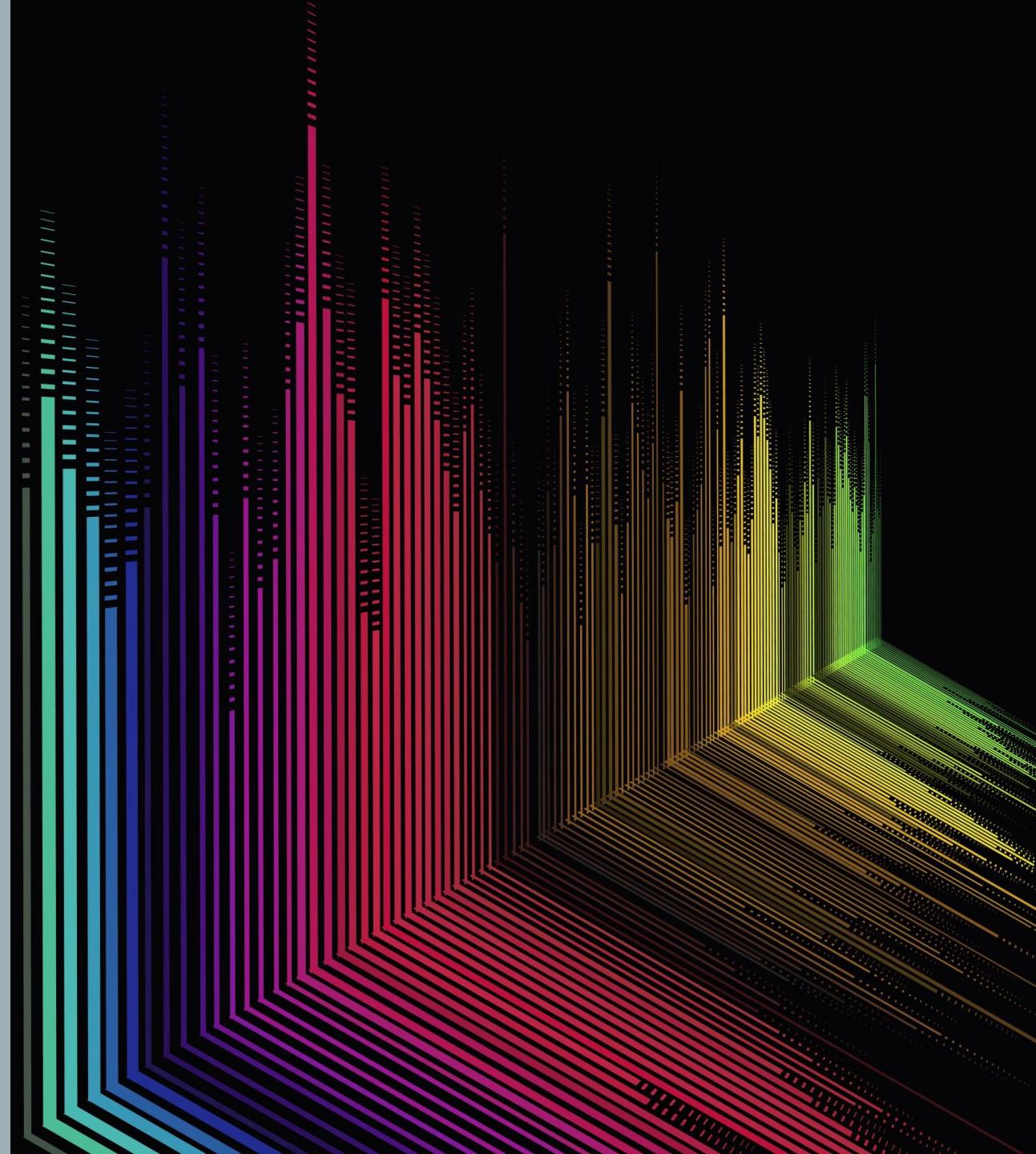


HOW DO WE BUILD A QUALITY APP?



SYNTHEZING A SOLUTION

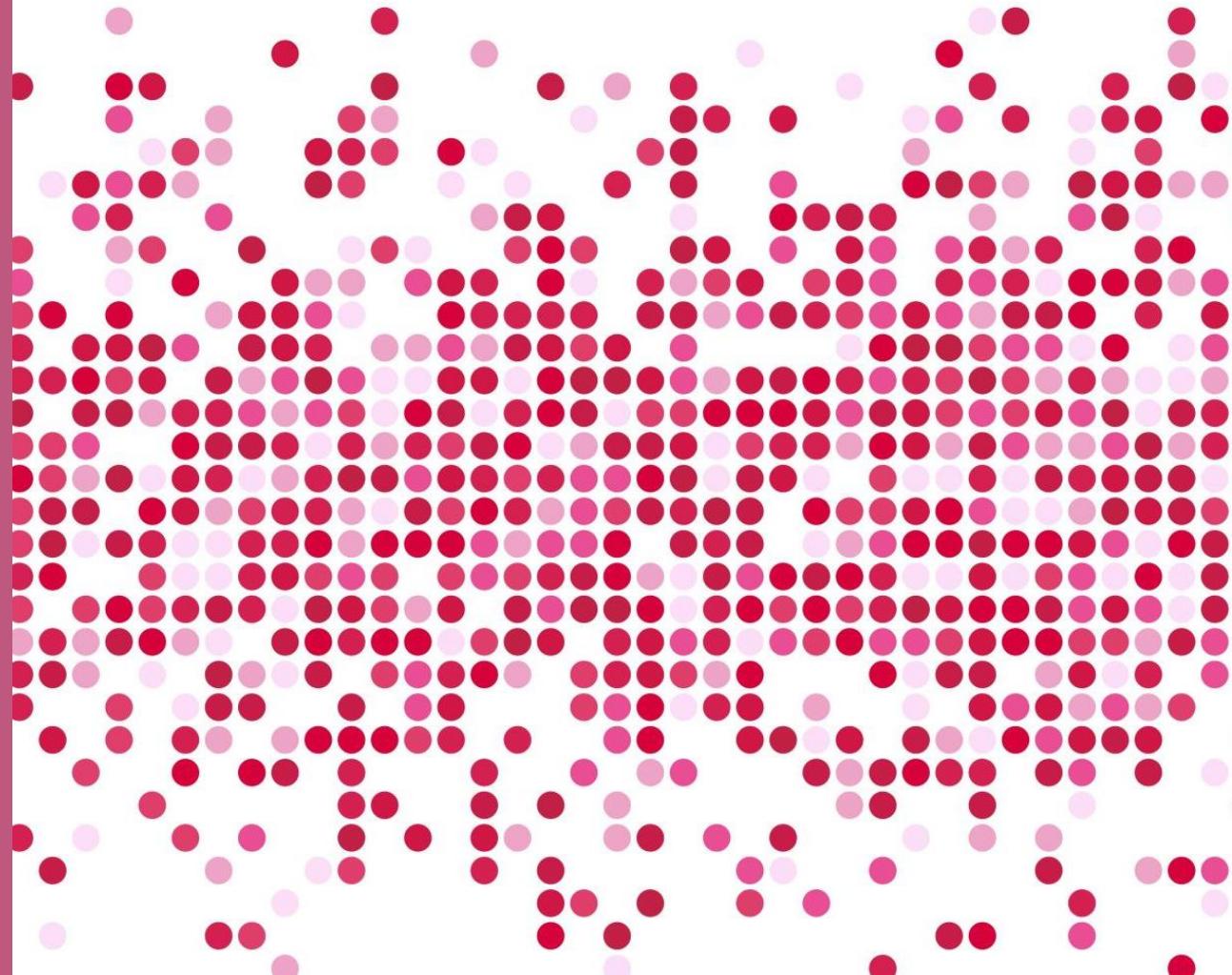
PROGRAMMING WITH TEAMS

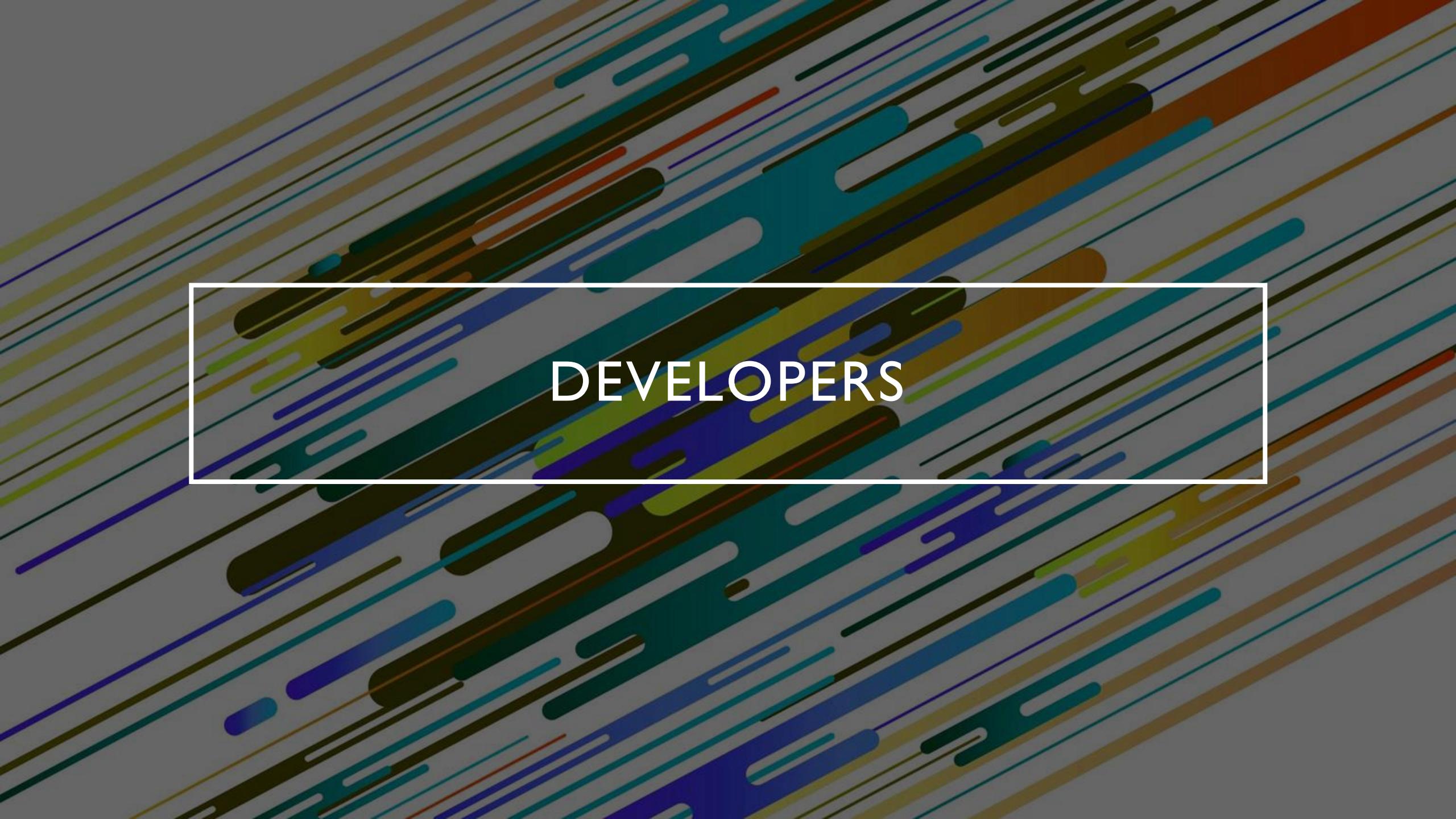




LEADERS & MANAGERS

GENERATE
REQUIREMENTS

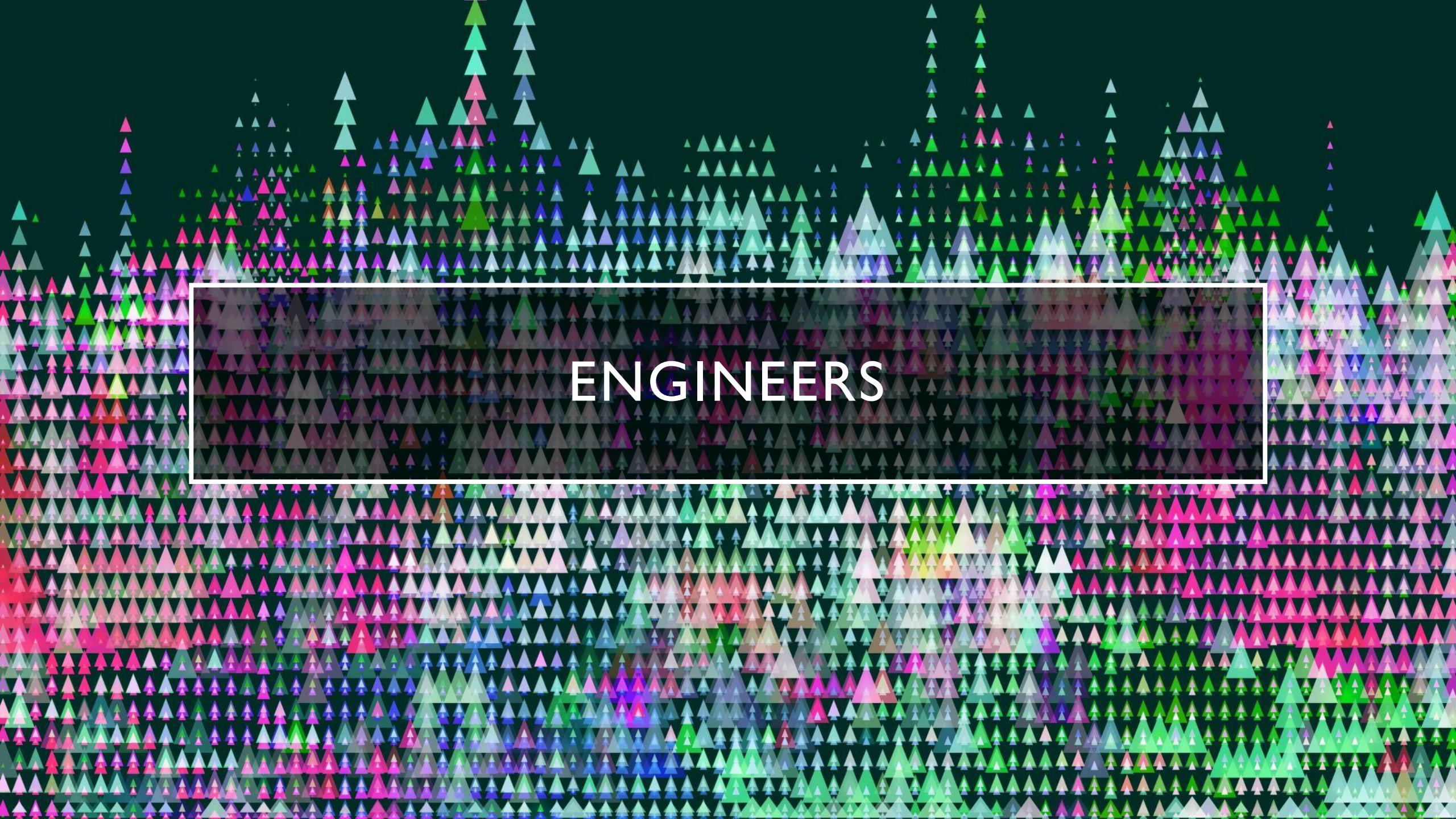




DEVELOPERS



DEVELOPERS WORK THE CODE



A dense field of small, colorful triangles (ranging from red, green, blue, and yellow) is scattered across a dark teal background, creating a textured, geometric pattern.

ENGINEERS



ENGINEERS MAKE STUFF WORK

SEPARATION OF DUTIES

10 MINUTE BREAK



TESTING

Does the code work?

Does the code work *as expected*?

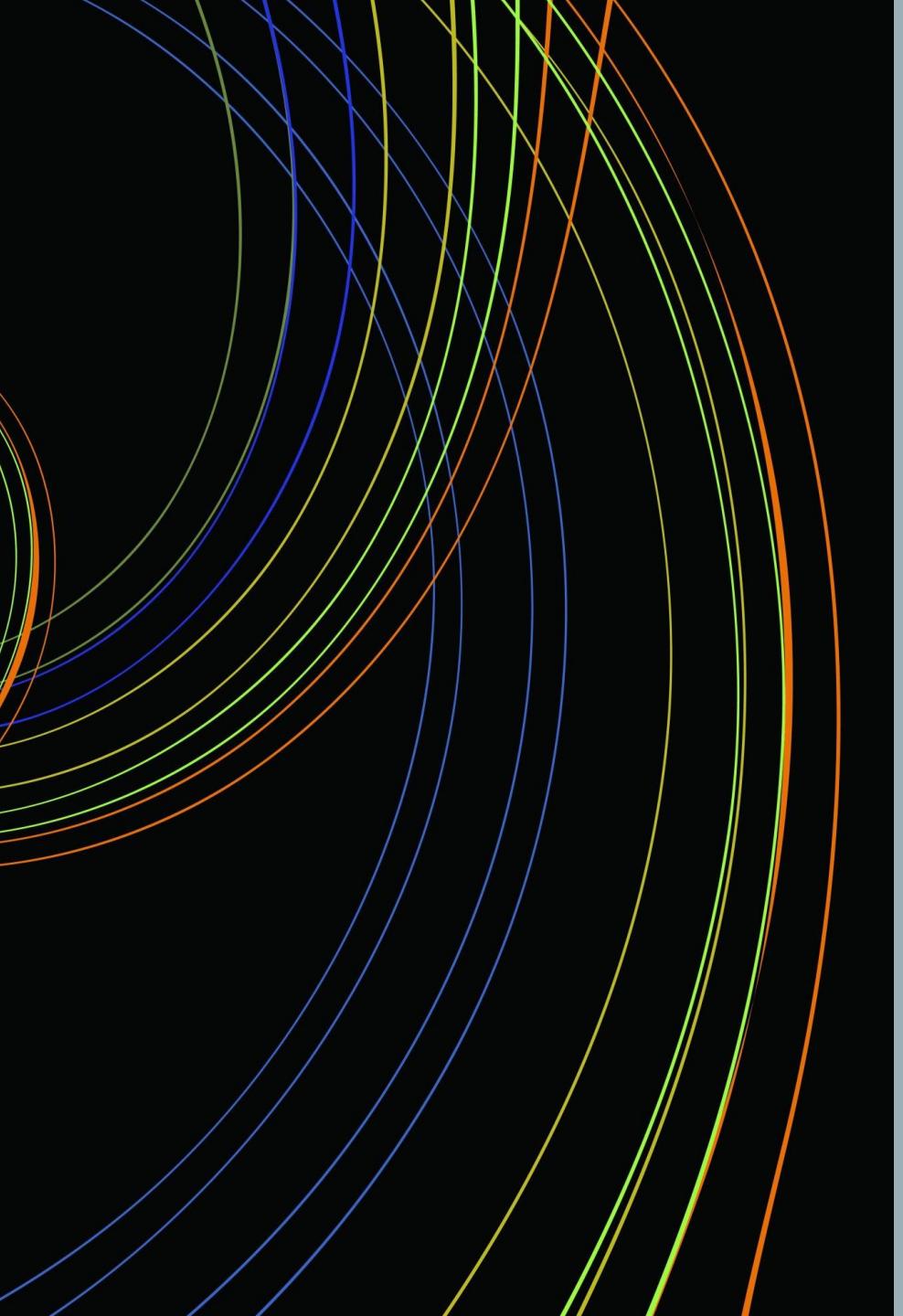
Does the code solve the problem we identified?

What does the code work on?

Does the code function with all of our supported systems?

Do we even know what possible systems exist in the field?





OUR CODE WORKS!

Now what?

CODE DISTRIBUTION



PROBLEM DISCOVERY



WHO ARE OUR USERS?



Do we know who they are?



**What kind of sensitive information
might we be processing?**

Personally identifiable information?

HIPAA information?

Legally sensitive?

SUPPORTING THOSE CUSTOMERS

How do our customers contact us?

How do we contact them?

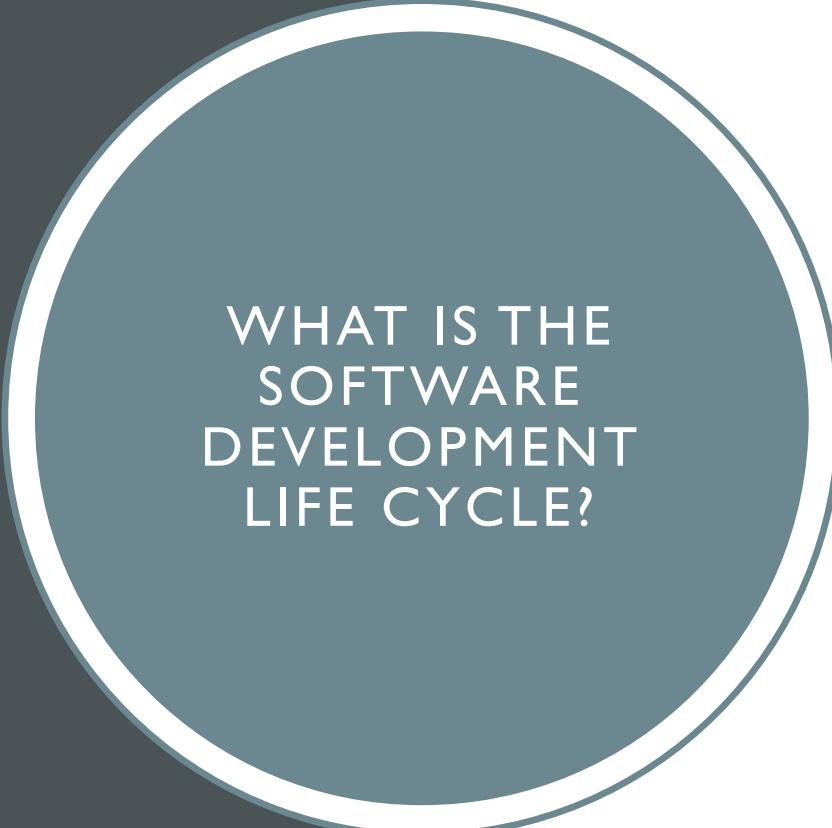
Do we have field support?

What is our process for addressing customer concerns/complains?

What is our process for addressing customer feature requests?

- Ticketing system?

SOFTWARE DEVELOPMENT LIFE CYCLE

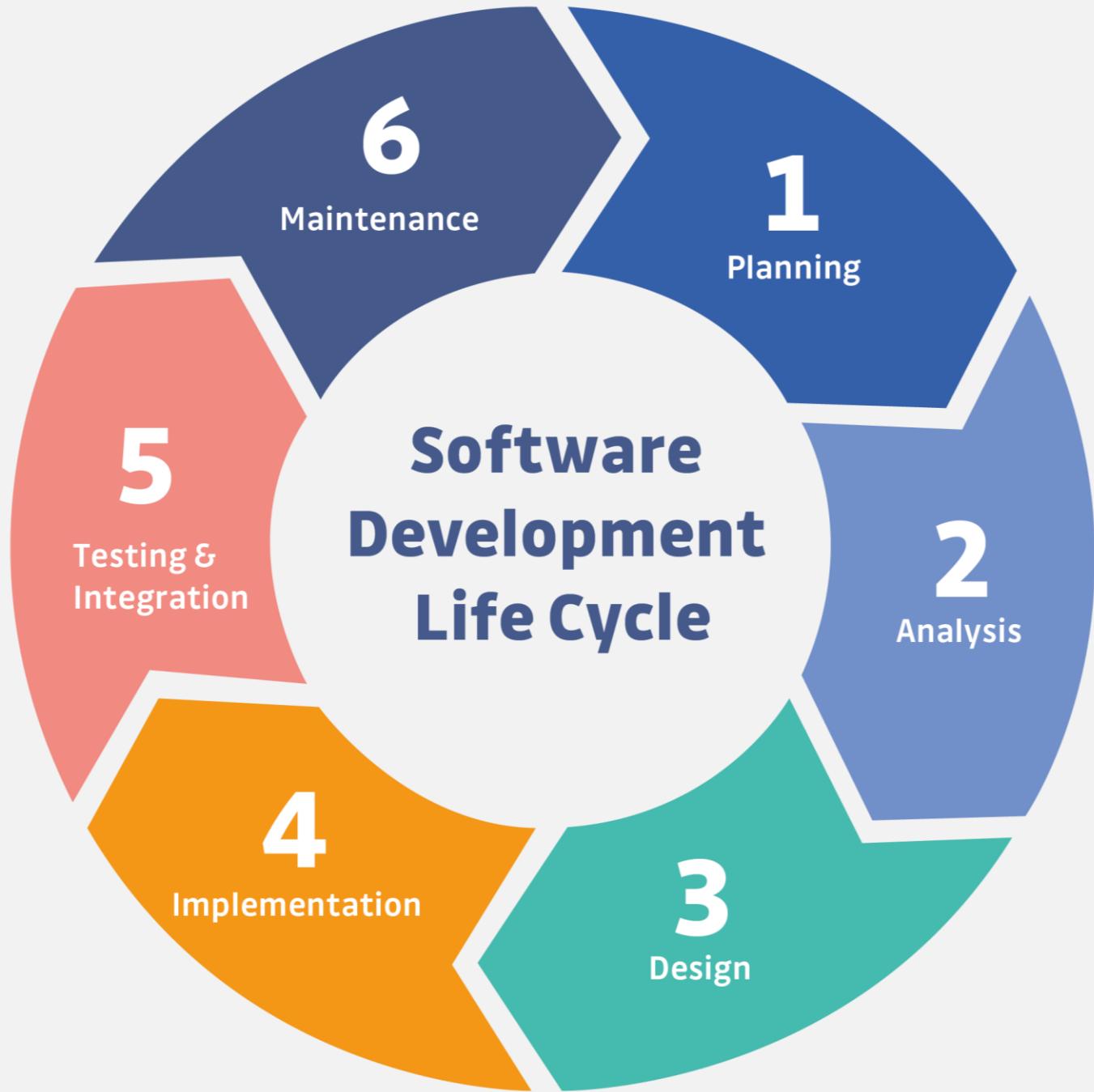


WHAT IS THE SOFTWARE DEVELOPMENT LIFE CYCLE?

- The SDLC helps us organize the process of building software
- Includes steps for building, revising, and deploying software
- Includes roles associated with each step along the building process



WHY DO WE NEED AN SDLC?





LET'S MAKE
A GITHUB
ACCOUNT

- <https://github.com>



QUESTION?

SESSION REVIEW