

Programming Logic And Design Tutorial

Arrays

Definition of Programming Logic and Design

The process of using a sequence of steps to solve a problem or perform a task

Basic Concepts

- Variables: labelled boxes where you can store information to use later. (score = 10)
- Control Structures: Decision-makers or traffic controllers in your code, they control the flow of what your program does. (If/Else/Then)
- Functions: a mini program inside your program that you can call to use later, without rewriting the code everytime.

Understanding Arrays

A list or row of boxes, where each box holds a value, and all the boxes are next to each other, you can use arrays to store multiple values in a single variable.

Array Syntax

Int [] numbers

String [] names

Examples

Fruit and Veggies Pseudocode

START

```
STRING fruitsList = ["Apple", "Banana", "Mango"]  
STRING veggiesList = ["Carrot", "Potato", "Spinach"]
```

```
OUTPUT "Fruits"  
FOR each fruit in fruitsList  
    OUTPUT fruit
```

END FOR

```
OUTPUT "Vegetables"  
FOR each veggie in veggiesList  
    OUTPUT veggie  
END FOR
```

STOP

Challenges faced

- Misunderstanding of Basic operations and their functions
- Loops
- Basic Operations

| Keyword | What it does | Example |
|-----------|-----------------------------------|---------------------------------|
| SET | Assigns a value to a variable | SET total = 0 |
| PRINT | Displays information to the user | PRINT "Hello" |
| INPUT | Gets input from the user | INPUT userName |
| CALCULATE | Performs a calculation | CALCULATE area = length * width |
| APPEND | Adds an item to a list/array | APPEND "Apple" TO fruitList |
| REMOVE | Removes an item from a list/array | REMOVE "Banana" FROM fruitList |

A loop is a way to make your program repeat something over and over until a condition is met.

E.G Let's say we are pouring 5 glasses of juice.

Instead of saying:

Pour juice

Pour juice

Pour juice

Pour juice

Pour juice

*FOR Loop :

Used when you know **how many times** you want to repeat.

You must say:

```
FOR I TO 5
```

```
    OUTPUT "Pour Juice"
```

```
END FOR
```

WHILE Loop

Used when you want to repeat while a condition is true

```
WHILE bottlesLeft > 0
```

```
    OUTPUT "Pour juice"
```

```
    INT bottlesLeft = bottlesLeft - 1
```

```
END WHILE
```

Logic Operators

In java, logical operators are used to combine or manipulate Boolean expressions (true or false).

1). & (and logic)

Returns if both conditions are true

2). // (Or logic)

Returns if at least one condition is true.

1). E.G And 2 conditions must be true

- Age is 18 or older
- Has a license

INT age = 25

BOOLEAN hasLicense = true

IF age >= 18 AND hasLicense == true

THEN

OUTPUT “You are allowed to drive.”

ELSE

OUTPUT “You are not allowed to drive.”

END IF

2). Only one condition needs to be true

- It's the weekend or
- It's a holiday

BOOLEAN isWeekend = true

BOOLEAN isHoliday = false

```
IF isWeekend == true OR isHoliday  
    == true THEN  
    OUTPUT "You can relax today."
```

```
ELSE  
    OUTPRINT "It's a work day."  
END IF
```