# INTRODUCTION TO PROGRAMMING

# WHAT IS PROGRAMMING?

*Writing human "readable" text that is transformed into a series of commands a computer can understand*

What kind of tasks would make good a candidate for a program?

- Repeatable tasks
- Manual tasks with risks of human error
- Pulling together lots of data from a wide range of sources

What kind of tasks would not make a good candidate for a program?

- Making decisions
- Applying context to a situation
- Recognising images
- All of these are changing as innovations in machine learning are being made

# WHO IS THIS?

# THIS IS WHAT GOOGLE VISION THOUGHT

Google Cloud Platform

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694606.jpg

| | |
|---|---|
| Blue | 97% |
| Facial Expression | 93% |
| Fashion Accessory | 90% |
| Smile | 85% |
| Headgear | 83% |
| Headpiece | 75% |
| Fun | 73% |
| Hat | 70% |

# WHAT IS THE 200TH DIGIT OF PI ?

# WHAT IS PROGRAMMING? (UPDATED)

*"Humans and computers using their strengths together to accomplish tasks"*

Computers are very literal


Windows
A fatal exception 0E has occurred at 0028:C562F1B7 in VXD ctpci9x(05)
+ 00001853. The current application will be terminated.
* Press any key to terminate the current application.
* Press CTRL+ALT+DEL again to restart your computer. You will
lose any unsaved information in all applications.
Press any key to continue _

# UNDERSTANDING PSEUDOCODE

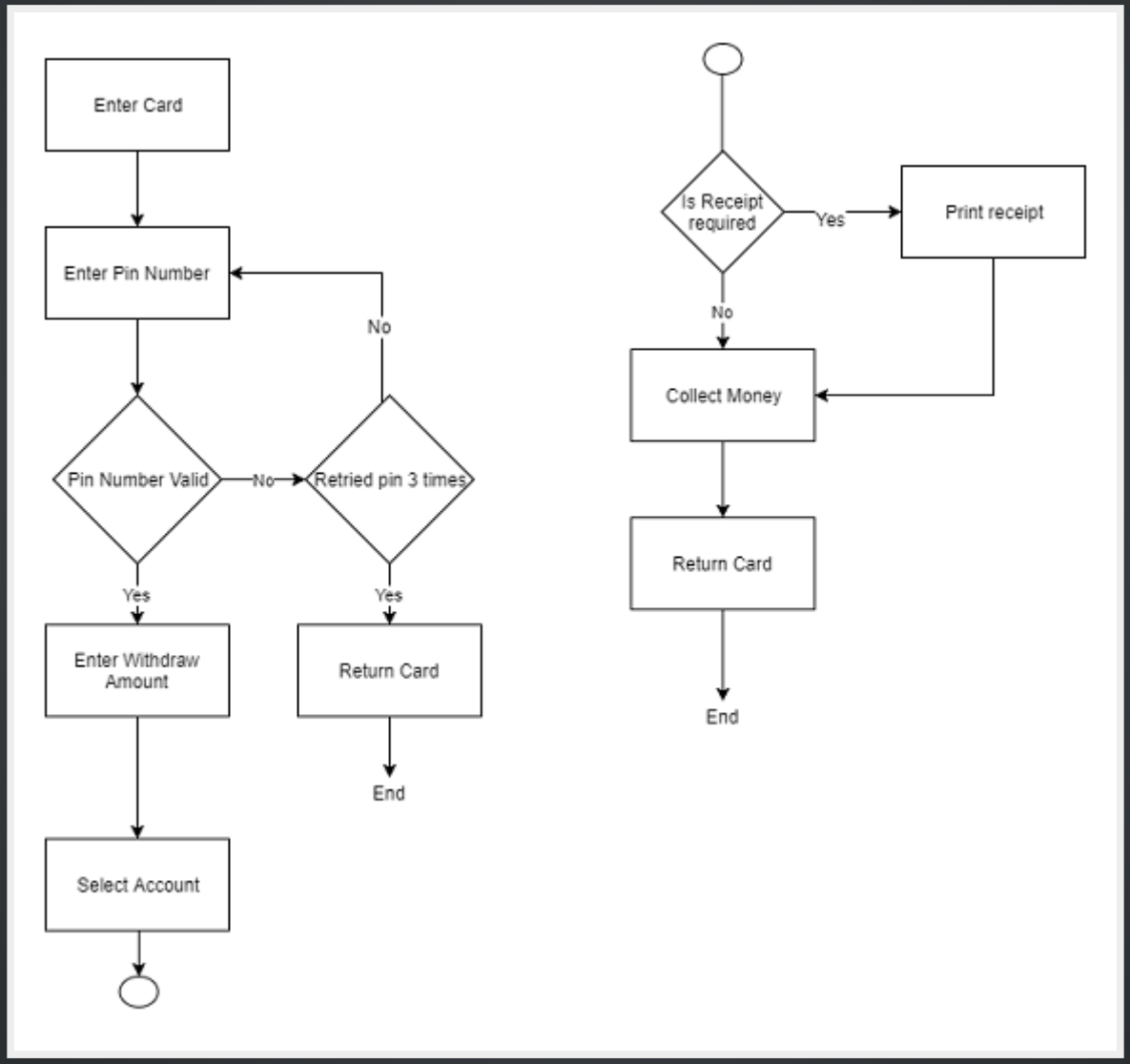
- Planning technique to write out a programs logic
- Language agnostic
- Great tool for collaborating

# PSEUDOCODE TECHNIQUES

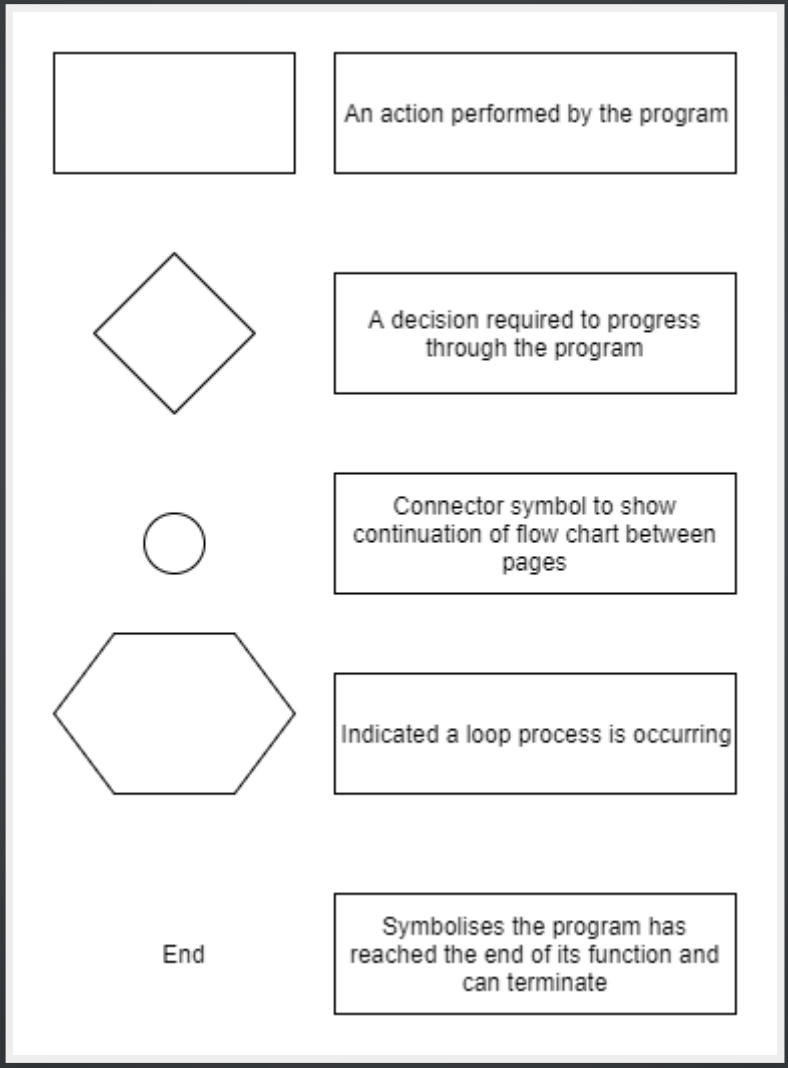
A simple list

1. Boil water in kettle
2. Put tea bag in cup
3. Wait for water to boil
4. Add boiled water to cup
5. Add sugar
6. Add milk
7. Serve

# Flow Chart


Enter Card
Enter Pin Number
Pin Number Valid
No
Retried pin 3 times
No
Yes
Yes
Enter Withdraw Amount
Return Card
End
Select Account
Is Receipt required
Yes
Print receipt
No
Collect Money
Return Card
End

# Flow Chart Key



# Pseudocode

```
PROGRAM PrintSumOf1To5
    Total = 0;
    A = 1;
    WHILE (A <= 5)
    DO  Total = Total + A;
        A = A + 1;
    ENDWHILE
    Print Total;
END
```

# PSEUDOCODE EXERCISE

In pairs, choose one of the pseudocode methods we have discussed to detail the steps in going through the checkout of a grocery store.

# VARIABLES

- A value that is stored and accessible from within an application
- Every variable is given a name, which can be used to reference the value throughout a program

# EXAMPLE OF DECLARING A VARIABLE

```
var x = "hello there!"
```

- **var** - Is a keyword that tells javascript you are declaring a variable
- **x** - Is the name of the variable
- **=** - Operator that tells javascript the value of the variable
- **"hello there!"** - The value of the variable to be stored. In this case, a string

# VARIABLE TYPES

| Name | Example | Description |
| --- | --- | --- |
| String | "Hey there!" | A series of characters surrounded by quotation marks |
| Number | 26 | Any number between $-2^{53}$ and $2^{53}$ |
| Boolean | True/False | A computer science concept of a value that either be true or false |
| Array | ["Hello", 2, true] | An ordered collection of data, can either be a primitive or an object |

# ASSIGNING VARIABLES

```
var x = "hello there!" // Declares a string variable
var y = 26 // Declares a number variable
var z = true // Delcares a boolean varaible
var xy = ["hello there!", 26, true]; // Declares an array
```

# VARIABLE EXERCISE

See Variable Exercise.docx

# EXTRA READINGS

- Slides available at https://github.com/evkw/GA.Front-End-Development
- Great introductory lessons on Javascript Javascript.com