Teaching London Computing

Programming for GCSE Topic 3.2: Dry Run a Program

William Marsh
School of Electronic Engineering and Computer Science
Queen Mary University of London

Aims

- Dry run: a technique to simulate the program execution
- Good for learning what a program does

Example Program

- Variables are:
  - mark
  - total
  - min
  - average
  - grade

```
# Enter two marks
#   Save minimum
mark = int(input("Mark 1 > "))
total = mark
min = mark

mark = int(input("Mark 2 > "))
if mark < min:
    min = mark
total = total + mark

# Calculate average
average = total / 2

# Calculate grade
if min < 30 or average < 50:
   grade = "fail"
else:
   grade = "pass"
```

Table of Variable Values

- Table has column for each variable
- Row for each step

Step	Variable				
	mark	total	min	average	grade
1	35				
2		35			
3			35		
4	45				
5		80			
6				40	
7					fail

Compact Table

- Fewer rows
  - Show latest value of each variable
- Just as useful when building it
  - Same steps to complete

Variable				
mark	total	min	average	grade
~~35~~	~~35~~	35	40	fail
45	80			

Teaching Issue

- Dry run is a technique for 'reading a program'
- Shows successive values of variables
  - Evidence that understanding variables is crucial
- Very good for loops