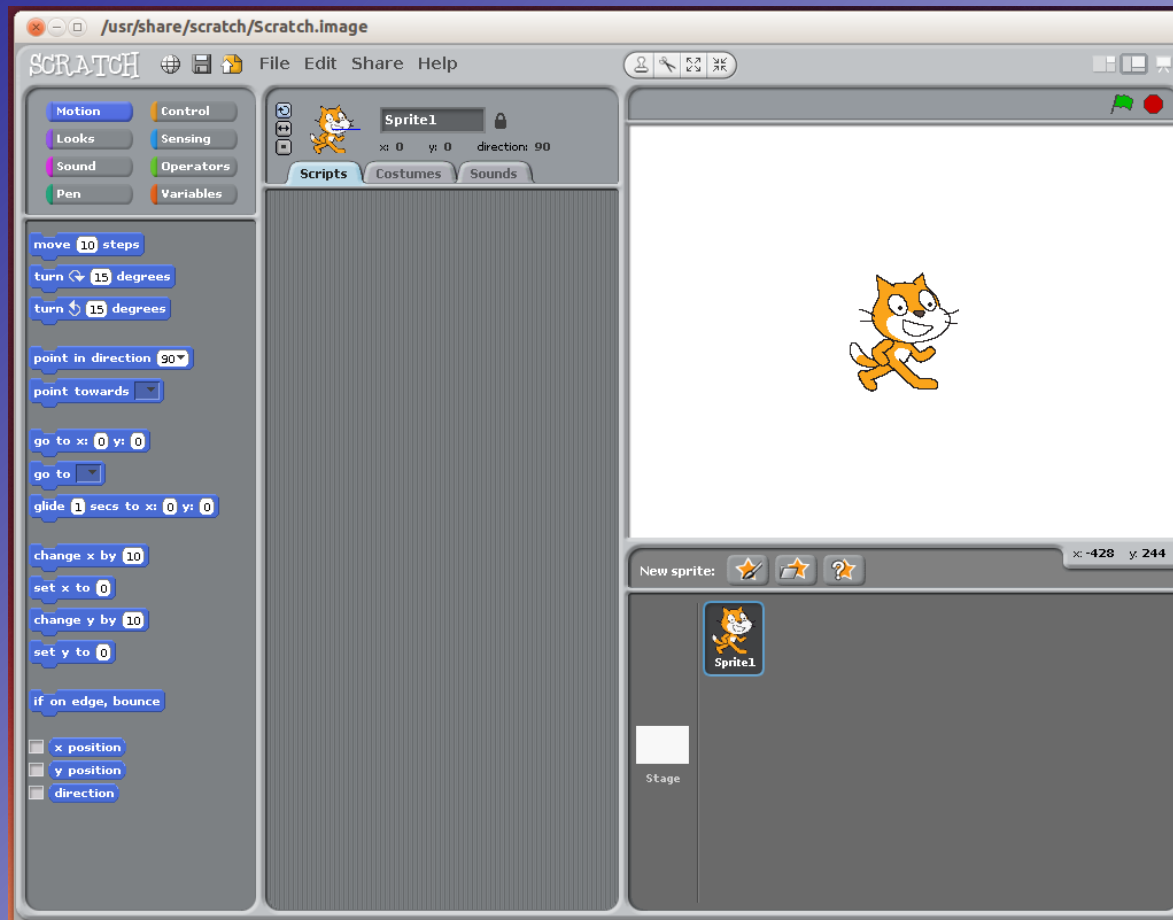


# Programming Scratch for Primary Schools



# Stewart Watkiss

- STEM Ambassador
- Data Centre Manager for AT&T
- Programming for about 20 years
- Volunteer with Code Club
- Involved in several Raspberry Pi projects
  - Own projects on PenguinTutor.com
  - Technical Book Reviewer for *Learn Raspberry Pi with Linux*

# Learning Scratch

- What is Scratch?
- Finding your way around Scratch?
- Programming techniques
  - Sequence
  - Selection
  - Repetition
- Variables
- Additional Scratch information

# First look at Scratch (v1.4)

The image shows the Scratch v1.4 interface with several components labeled:

- SAVE LANGUAGE**: Located at the top left of the interface.
- SHARE**: Located at the top left of the interface.
- SPRITE ROTATION STYLE**: Located at the top left of the interface.
- CURRENT SPRITE INFO**: Located at the top left of the interface.
- TABS**: Located at the top left of the interface.
- TOOLBAR**: Located at the top left of the interface.
- VIEW MODE**: Located at the top left of the interface.
- PRESENTATION MODE**: Located at the top left of the interface.
- BLOCKS PALETTE**: Located on the left side of the interface, containing blocks for programming sprites.
- SCRIPTS AREA**: Located in the center of the interface, where blocks are dragged and snapped together into scripts.
- GREEN FLAG**: Located at the top right of the interface, used to start scripts.
- STOP SIGN**: Located at the top right of the interface, used to stop all scripts.
- STAGE**: Located in the center-right of the interface, where Scratch creations come to life.
- MOUSE X-Y DISPLAY**: Located at the bottom right of the interface, showing the location of the cursor.
- NEW SPRITE BUTTONS**: Located at the bottom right of the interface, used to create a new character or object for the project.
- SPRITE LIST**: Located at the bottom right of the interface, showing thumbnails of all sprites.

# First look at Scratch (v2)



# Programming techniques

- Sequence
- Selection
- Repetition
  
- Variables

# Sequence





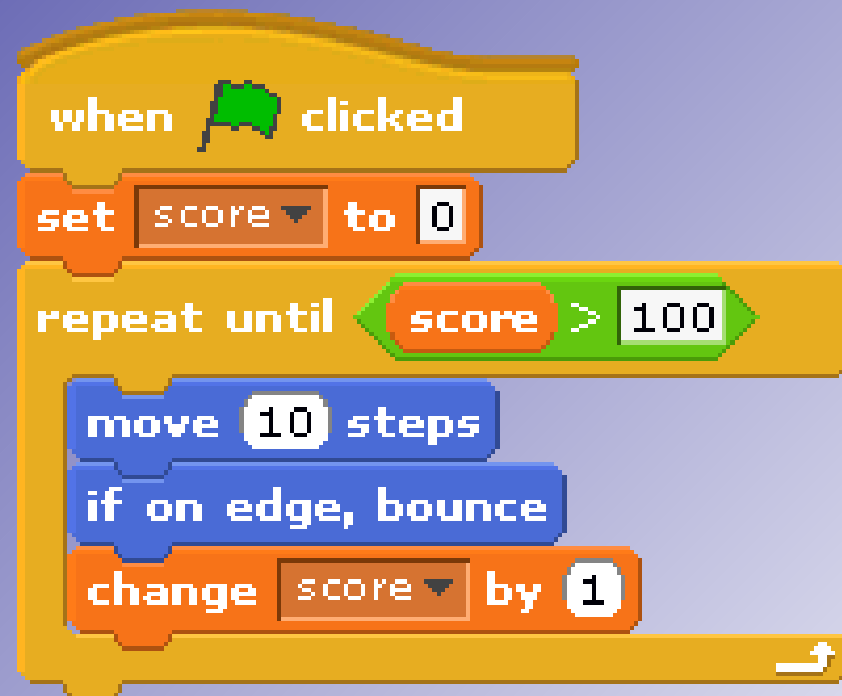
# Selection

```
if <score > 10
  say Well done! You win!
```

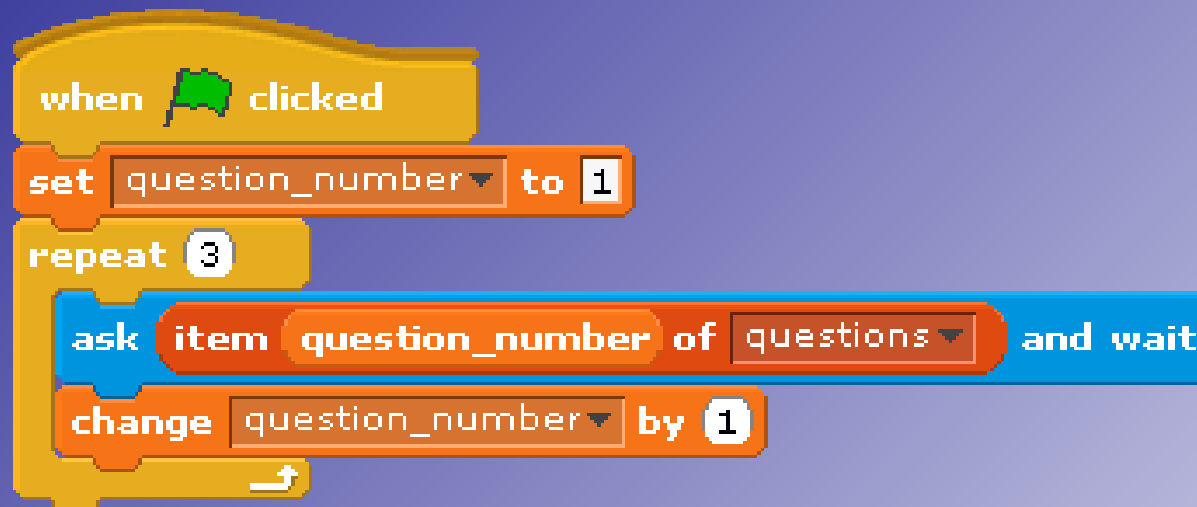
```
if touching edge ?
  say You reached the end of the screen
else
  move 10 steps
```



# Repetition



# Repetition

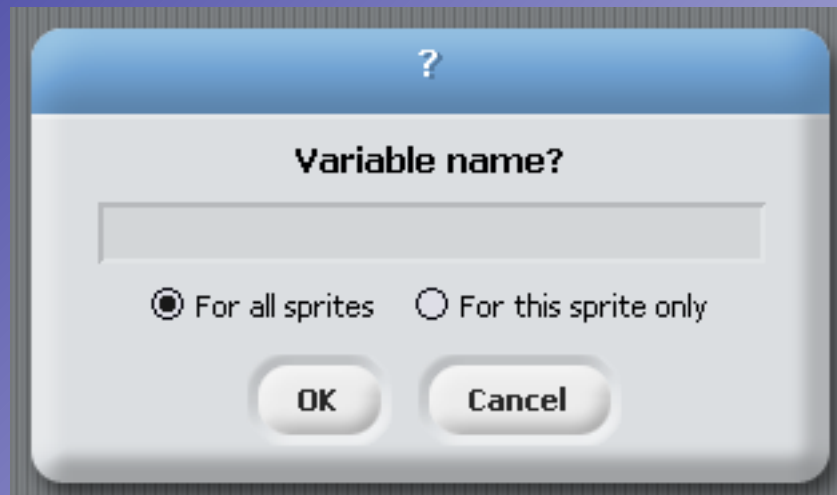


# Variables

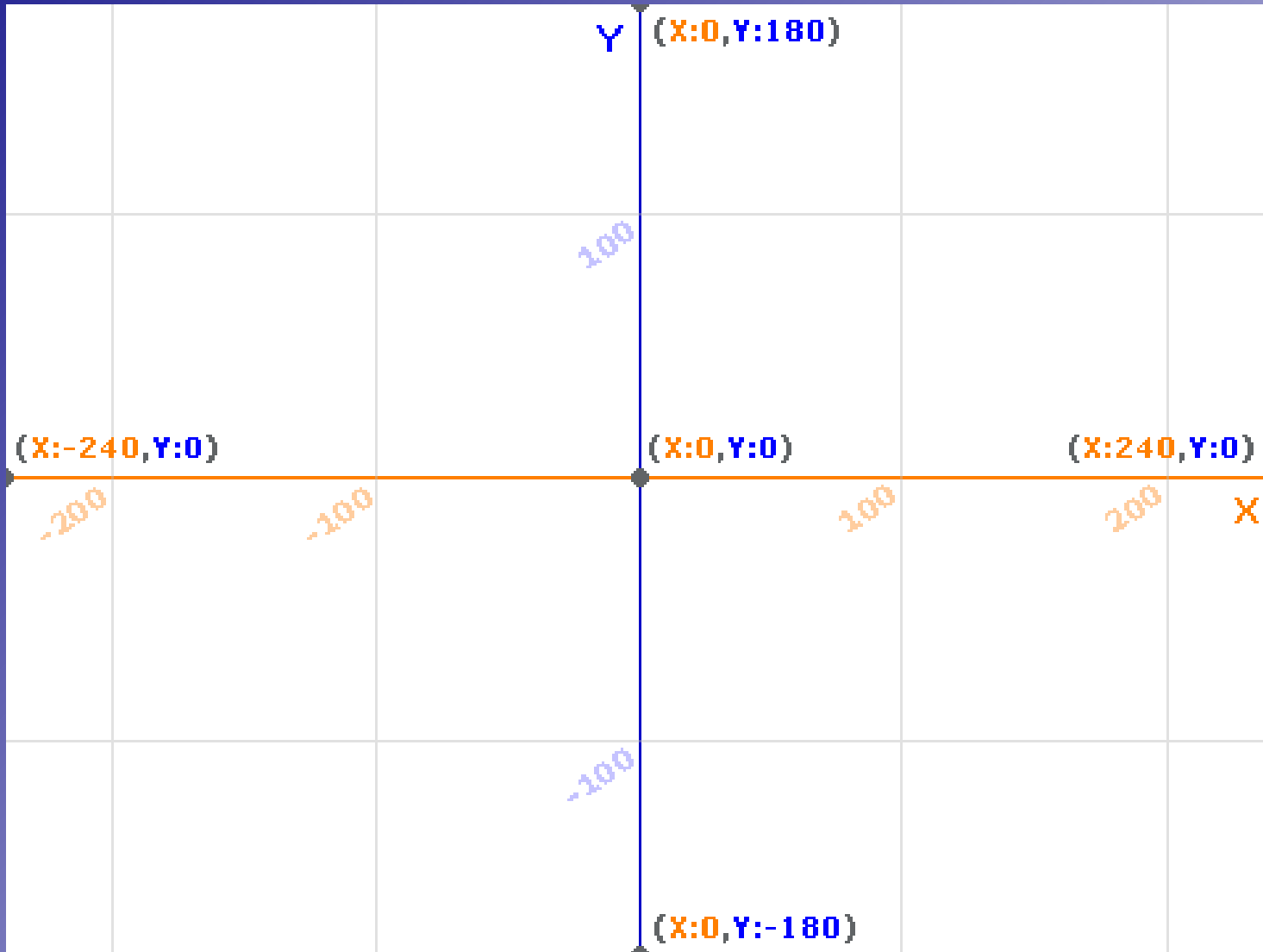
- Numbers
  - like  $x$  and  $y$  are used in algebra
- Text – word or sentence
  - called strings
- Logical values
  - true or false
  
- List

# Variables

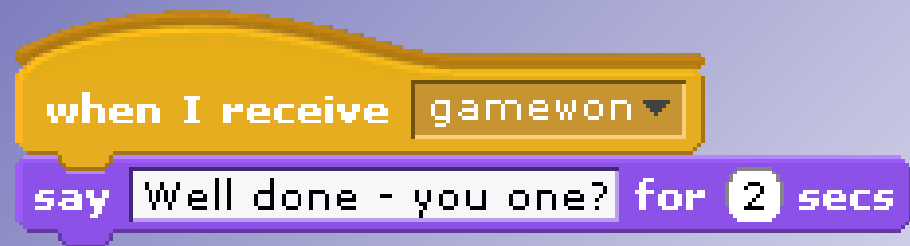
- Difference between a shared variable and a sprite variable



# Stage grid



# Broadcast messages



# What we've covered

- Scratch
  - Interface, Stage, Sprites and code
- Programming techniques
  - Sequence, Selection and Repeition
- Variables
- Additional Scratch information



# Questions

# Homework!

- Work through Quiz Game
- Raspberry Pi Education Manual (Scratch)

# Teaching computing

- See CAS guide to the National Curriculum
- Raspberry Pi Manual

# References

- Computing at School - Computing in the National Curriculum
  - [www.computingatschool.org.uk/primary](http://www.computingatschool.org.uk/primary)
- Scratch
  - <http://scratch.mit.edu/>
- CAS Raspberry Pi Education Manual
  - [http://pi.cs.man.ac.uk/download/Raspberry\\_Pi\\_Education\\_Manual.pdf](http://pi.cs.man.ac.uk/download/Raspberry_Pi_Education_Manual.pdf)
- Junior computer science
  - <http://code-it.co.uk/>
- Code Club (After school club)
  - <https://www.codeclub.org.uk/>
- The MagPi (Raspberry Pi magazine)
  - <http://www.themagpi.com/>
  -