

Make Your Own Pacman Game

VT Masterclass
<http://www.dcs.shef.ac.uk/vt>

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Aim of This Session

- Insight into software design, development and testing
- Experience of the XP paradigm
- Work within a team to deliver a product
- **Goal:** Produce a Pacman game using the MIT Scratch tool

What is XP?

- An *agile* software development method
- Differs from more traditional methods where the focus is on producing a design for the system before writing code.
- Software is built up step by step with a focus on *testing*
- Each step is a *story*, one particular feature usually chosen by a *client*.
- A story is judged complete when it satisfactorily passes appropriate tests.
- A *test first* strategy means that such tests are developed prior to any code.

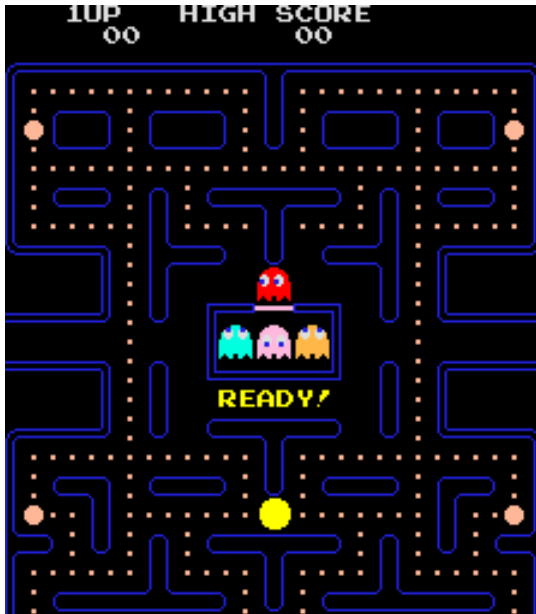
What is XP?

- *Pair programming* is also a key aspect of XP.
- Developers work in pairs.
- They take it in turns to either write the code or observe.
- The observer can catch mistakes made by the coder and has a more distanced view of the task in hand.

What is Pacman?

- Classic arcade game originating in the 1980s
- The main character controlled by the player, the Pac Man, has to travel around a maze, eating food pellets.
- Each level is completed when all pellets have been consumed.
- The maze is inhabited by ghosts. If one catches the Pac Man, he loses a life. If all lives are lost, the game is over.
- A variety of *powerups* are also available to further spice up the game. A common one is to give the Pac Man the ability to consume the ghosts.

The Pacman Game



What is MIT Scratch?

- MIT Scratch is a tool for programming in a *visual* manner.
- Rather than learning a complex syntax and writing code from scratch, blocks of code are arranged graphically.
- Scratch works using fairly high-level primitives such as moving a character ten steps, playing a sound or responding to a key being pressed.

Scratch

The screenshot shows the Scratch 1.1 interface. At the top, the title bar reads "Scratch 1.1". Below it is a menu bar with options: "New", "Open", "Save", "Save As", "Share!", "Undo", "Language", "Extras", and "Want Help?". On the left is a sidebar with category tabs: "Motion", "Control", "Looks", "Sensing", "Sound", "Numbers", "Pen", and "Variables". The "Motion" category is selected, showing a list of motion blocks such as "move 10 steps", "turn 15 degrees", "point in direction 90", "go to x: -102 y: 93", and "glide 1 secs to x: -102 y: 93".

The main workspace is divided into three sections. The top section is the "Scripts" area, which contains a script for "Sprite1" with the following blocks: "pen down", "stamp", "move 10 steps", "turn 15 degrees", and "pen up". The top-right section is the stage, which displays two instances of the Pacman character: one in a dynamic pose and one as a circular stamp. The bottom-right section is the "Stage" area, showing a "Sprite1" icon with "3 costumes" and a "Stage" label. The mouse coordinates are displayed as "mouse x: 48" and "mouse y: 240".

Conclusions

- The best way to get to know Scratch is just to play around and see how things work.
- Scratch is available from <http://scratch.mit.edu>
- Scratch also has its own online community so you can share your ideas with others and see their creations too.
- You can save what you create locally or click 'Share' to upload it to the Scratch website (you need a username on the site for this).
- You can design your own backgrounds and sprites if you're feeling artistic.
- The Scratch website has lots of material for you to use, including more detailed guides on its features.
- Most importantly, have fun!

Your Task

In a team, use the MIT Scratch tool to create a Pacman game by working through the stories you'll be given. In order to complete each story, your game should be able to meet the test criteria specified in the story card. Work your way through at your own pace and don't feel you need to complete the whole game. You can always have another go in your own time at home.