PARTIEL S2 – 04/2015 – MOB 2

Retranscription du partiel :

Modéliser le logiciel Scratch en 3 diagrammes (Fonctionnel, Statique, Dynamique) en UML à partir de la référence fournie ci-joint.

Bonus :

Combien-y-a-t-il de poissons dans ce sujet ?

scratch.mit.edu / Scratch reference guide

1. INTRODUCTION

Scratch is a new programming language that makes it easy to create interactive stories, games, and animations – and share your creations with others on the web.

This Reference Guide provides an overview of the Scratch software. If you are just getting started with Scratch, we encourage you to try the ***Getting Started Guide*** first (available from the *Support* section on the Scratch website). Then, if you want more detailed information, come back to the Reference Guide.

The Scratch website has many other resources to help you learn Scratch: Video tutorials, Scratch cards, and Frequently Asked Questions (FAQs). Please see *http://info.scratch.mit.edu/Support/*

This guide is for Scratch version 1.4, released July 2009. For the latest version of this Reference Guide, please see: *http://info.scratch.mit.edu/Support/*

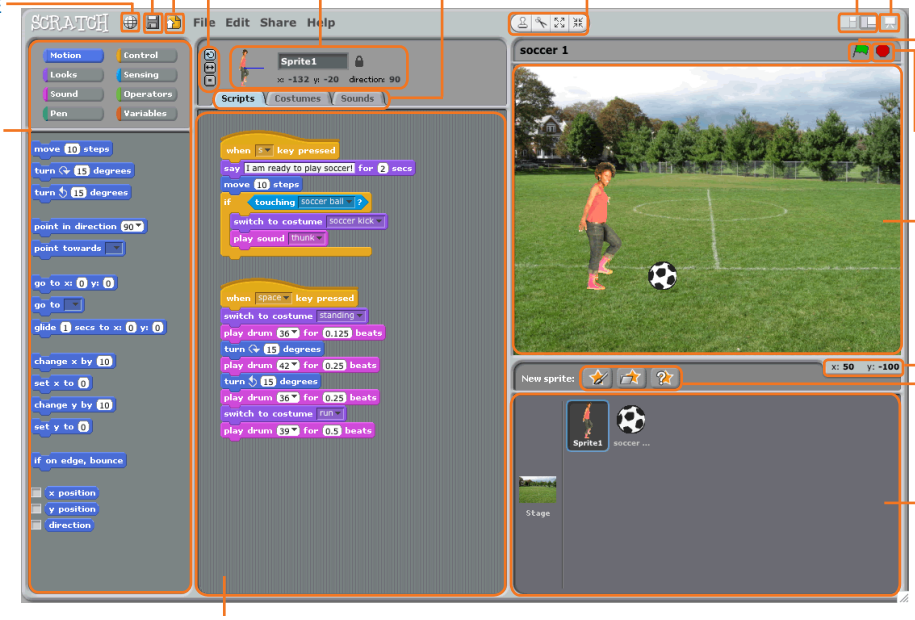
BASIC INGREDIENTS OF A SCRATCH PROJECT

Scratch projects are made up of objects called **sprites**. You can change how a sprite looks by giving it a different **costume**. You can make a sprite look like a person or a train or a butterfly or anything else. You can use any image as a costume: you can draw an image in the Paint Editor, import an image from your hard disk, or drag in an image from a website.

You can give instructions to a sprite, telling it to move or play music or react to other sprites. To tell a sprite what to do, you snap together graphic **blocks** into stacks, called **scripts**. When you click on a script, Scratch runs the blocks from the top of the script to the bottom.

Scratch is developed by the Lifelong Kindergarten Group at the MIT Media Lab, with financial support from the National Science Foundation, Microsoft, Intel Foundation, Nokia, and the MIT Media Lab research consortia.

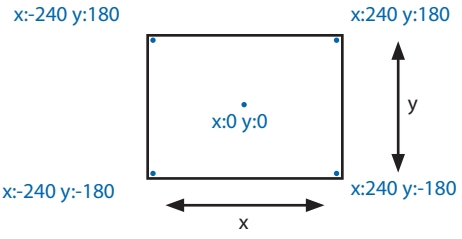
2. SCRATCH INTERFACE



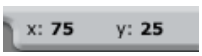
STAGE

The **Stage** is where you see your stories, games, and animations come to life. Sprites move and interact with one another on the Stage.

The Stage is 480 units wide and 360 units tall. It is divided into an x-y grid. The middle of the Stage has an x-coordinate of 0 and a y-coordinate of 0.



To find out x-y positions on the Stage, move the mouse (cursor) around and look at the **mouse x-y display** just below the Stage.



Click the **Presentation Mode** button when you want to present your project. To exit Presentation Mode, press the Esc key.

Click the **View Mode** buttons to switch between small and large stage view. You can use small stage view to display Scratch on small screens or to expand the Scripts Area.

NEW SPRITES

When you start a new Scratch project, it begins with a single cat sprite.
To create new sprites, click on these buttons:


Paint your own costume for a new sprite using the Paint Editor.


Select a costume for a new sprite – or import an entire sprite.

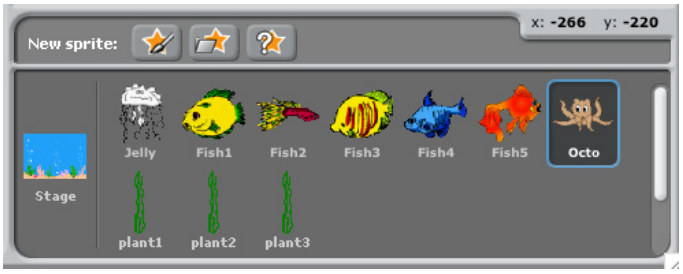

Get a surprise sprite.

If you want to delete a sprite, select the scissors from the Toolbar and click on the sprite. Or right-click (Mac: Ctrl+click) on the sprite and select *delete* from the pop-up menu.

To make a sprite that looks like part of the Stage background, right-click (Mac: Ctrl+click) the Stage and select *grab screen region for new sprite*.

SPRITE LIST

The **Sprite List** displays thumbnails for all sprites in a project. The name of each sprite appears below its thumbnail.



To see and edit a sprite's scripts, costumes, and sounds, click on the sprite's thumbnail in the Sprite List – or double-click on the sprite itself on the Stage. (The selected sprite is highlighted and outlined in blue in the Sprite List.)

To show, export, duplicate, or delete a sprite, right-click (Mac: Ctrl+click) on the sprite's thumbnail in the Sprite List. To show a sprite that is off the Stage or hidden, Shift+click on the sprite's thumbnail in the Sprite List - this will bring the sprite to the middle of the Stage and show it.

You can rearrange the sprites in the Sprite List by dragging the thumbnails.

Just as a sprite can change its appearance by switching costumes, the Stage can change its appearance by switching **backgrounds**. To see and edit the scripts, backgrounds, and sounds associated with the Stage, click on the Stage icon at the left of the Sprite List.

BLOCKS PALETTE and SCRIPTS AREA

To program a sprite, drag blocks from the **Blocks Palette** to the **Scripts Area**. To run a block, click on it.

Create scripts (programs) by snapping blocks together into stacks. Click anywhere on the stack to run the whole script, from top to bottom.

To find out what a block does, right-click (Mac: Ctrl+click) on it, then select *help* from the pop-up menu.

When you drag a block around the Scripts Area, a white highlight indicates where you can drop the block and form a valid connection with another block.

To move a stack, pick it up from the top block. If you drag out a block from the middle of a stack, all of the blocks beneath it will come along with it. To copy a stack of blocks from one sprite to another, drag the stack to the thumbnail of the other sprite in the Sprite List.

Some blocks have white editable text fields inside, such as 

. To change the value, click inside the white area and type in a number. You can also drop rounded blocks, like 

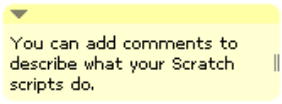
, inside these areas.

Some blocks also have pull-down menus, such as 

. Click on the ▾ to see the menu.

To clean up the Scripts Area, right-click (Mac: Ctrl+click) and select *clean up* from the menu. To export a screenshot of the Scripts Area, right-click and select *save picture of scripts*.

To add a comment to the Scripts Area, right-click (Mac: Ctrl+click) and select *add comment*. A yellow comment area will appear, and you can type in text.



To resize the width of the comment area, use the handle on the right edge. Click the triangle at the top-left to collapse or expand the comment area.

Comments can be added anywhere in the Scripts area, and you can move them around by dragging them.

To attach a comment to a block, drag the comment on top of the block. To detach the comment, drag the comment away from the block.

COSTUMES

Click the **Costumes** tab to see and edit the sprite's costumes.

This Sprite has two costumes. The sprite's current costume (girl1-walking) is highlighted. To switch to a different costume, simply click on the thumbnail of the costume you want.

There are four ways to create new costumes:

- Click Paint to paint a new costume in the Paint Editor.
- Click Import to import an image file from your hard disk.
- Click Camera to take photos from a webcam (built into or connected to your computer). Each time you click the button (or press the spacebar), it takes a photo.
- Drag in one or more images from the web or your desktop.

Scratch recognizes many image formats: JPG, BMP, PNG, GIF (including animated GIF).

Each costume has a costume number (displayed to its left). You can rearrange the order of the costumes by dragging the thumbnails. The costume numbers update if you change their order.

Right-click (Mac: Ctrl+click) on a costume thumbnail to convert the costume into a new sprite, or to export a copy of the costume as a separate file.

SOUNDS

Click the **Sounds** tab to see the sprite's sounds.

You can record new sounds or import sound files. Scratch can read MP3 files and uncompressed WAV, AIF, and AU files (encoded with 8-bits or 16-bits per sample, but not 24-bits per sample).

CURRENT SPRITE INFO

Current Sprite Info shows a sprite's name, x-y position, direction, lock state, and pen state.

You can type in a new name for the sprite.

The sprite's direction indicates which direction the sprite will move when it runs a move block (0=up, 90=right, 180=down, -90=left). The blue line on the thumbnail shows the sprite's direction. You can drag this line to change the sprite's direction. Double-click on the thumbnail to set the direction back to its original state (direction=90).

Click the **Lock** to change the sprite's lock state. An unlocked sprite can be dragged in presentation mode and the web player.

You can see the current pen color (next to the Lock) when the pen is down.

To export a sprite, right-click (Mac: Ctrl+click) the sprite on the Stage or in the Sprite List. Exporting saves the sprite as a *.sprite* file, which can then be imported into another project.

ROTATION STYLE

Click the **Rotation Style** buttons to control how the costume appears as the sprite changes its direction.

- Rotate: The costume rotates as the sprite changes direction.
- Left-right flip: The costume faces either left or right.
- No-rotate: The costume never rotates (even as the sprite changes direction).

TOOLBAR

Click on the **Toolbar** to select a tool, then click on other objects to perform an action.

- **Duplicate:** Duplicate sprites, costumes, sounds, blocks, or scripts. (Shift+click for multiple.)
- **Delete:** Delete sprites, costumes, sounds, blocks, and scripts. (Shift+click for multiple.)
- **Grow:** Make sprites bigger. (Shift+click for larger size steps.)
- **Shrink:** Make sprites smaller. (Shift+click for larger size steps.)

To return to the arrow cursor, click on any blank area of the screen.

MENU

Click the Language icon to change the language for the Scratch user interface. Anyone can add or edit language translations of Scratch. To add or change a translation, please refer to the *Support* section of the Scratch website (*http://info.scratch.mit.edu/Translation/*).

Click the Save icon to save your project.

Click the Share icon to upload your project to the Scratch website.

From the **File** menu you can create a new project, open an existing project, and save projects to the Scratch Projects folder or to other locations.

Import Project brings all of the sprites and backgrounds from another project into the current project. This feature is useful for combining sprites from multiple projects.

Export Sprite saves the current sprite as a *.sprite* file, which can then be imported into another project.

Project Notes allows you to write and save notes about your project, such as instructions on how to use it.

Quit exits the Scratch program.

The **Edit** menu provides several features for editing the current project.

Undelete allows you to retrieve the last block, script, sprite, costume, or sound you deleted.

Start Single Stepping allows you to watch Scratch programs run one step at a time. Each block is highlighted as it runs. This feature can be useful for finding bugs in programs, and for helping new programmers understand the flow of a program. *Set Single Stepping* allows you to choose the speed of single stepping (from slow to turbo speed).

Compress Sounds or *Compress Images* to reduce the overall project file size. Compressing may reduce the quality of the sounds or images.

Show Motor Blocks adds motor blocks to the Motion category. You can use the motor blocks to program a motor connected to your computer. The motor blocks work with LEGO® Education WeDo™ (*http://www.legoeducation.com*).