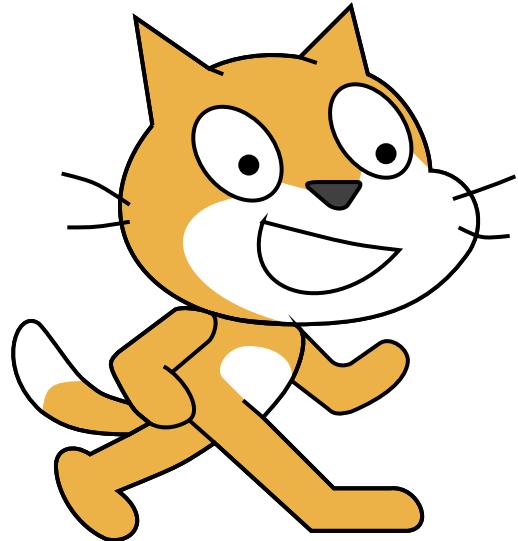
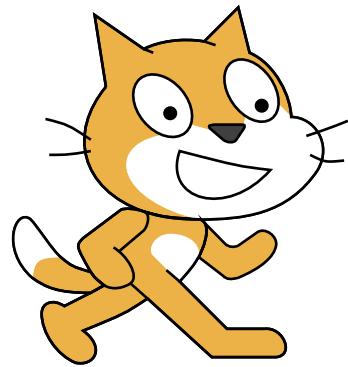
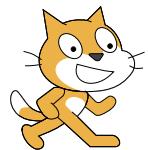


User guide: package `ScratchX.sty`

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## 1 Introduction

The **ScratchX.sty** package allows you to write any kind of Scratch program in L<sup>A</sup>T<sub>E</sub>X.

The **ScratchX.sty** package has to be put at least in the same file where the document **.tex** is created, or in the dedicated place in your computer.

The **ScratchX.sty** package must be called in the preamble of the document **.tex** with:

```
\usepackage{ScratchX}
```

The **ScratchX.sty** package uses the following packages:

```
\usepackage[nomessages]{fp}
\usepackage{calc}
\usepackage{xstring}
\usepackage[alpine]{ifsym}%pour avoir VarFlag comme
%drapeau de départ de Scratch
\usepackage{ifthen}
\usepackage{multido}
\usepackage{xargs}
```

In the document **.tex** that you want to create, you need to load:

```
\usepackage{tikz}
\usetikzlibrary{calc}
```

and also:

```
\usepackage{amssymb}
```

You can compile with XeLaTeX or pdfLaTeX.

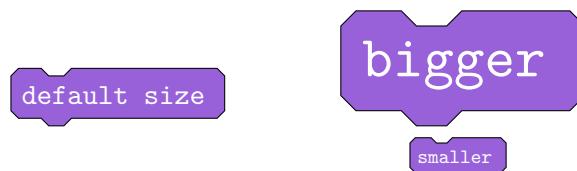
## 2 General description

We write a program (or simply a command) Scratch with the environment:

```
\begin{Scratch}
% \LaTeX commands in order to create the Scratch commands
\end{Scratch}
```

The command `\begin{Scratch}` has the scale in option (1 by default).

Thus, `\begin{Scratch}[2]` doubles the program size, whereas `\begin{Scratch}[0.7]` reduces by 70% the size of the created program.



### The colors

The ten specific Scratch colors are defined like this:

mvt :	Motion	evt :	Events
app :	Looks	ctrl :	Control
son :	Sound	capt:	Sensing
stylo:	Pen	ope:	Operators
data:	Data	bloc:	More blocks

### 3 Command list

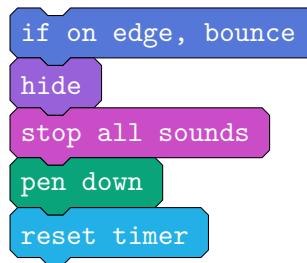
#### 3.1 Simples

Obtained with \scbox{<text>}{<color>}.

Typing:

```
\begin{Scratch}
\scbox{if on edge, bounce}{mvt}
\scbox{hide}{app}
\scbox{stop all sounds}{son}
\scbox{pen down}{stylo}
\scbox{reset timer}{capt}
\end{Scratch}
```

you get:



#### 3.2 Specials

##### 3.2.1 Events

Obtained with \beginbox{<text>}.

\beginbox{} gives quand est cliqué

\beginbox{clone} gives quand je commence comme un clone

\beginbox{when this sprite clicked} gives

when this sprite clicked

##### 3.2.2 Turn

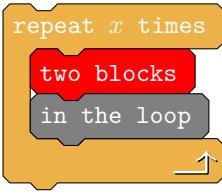
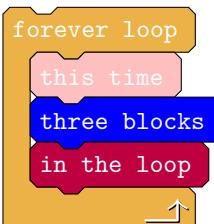
Obtained with \turnbox{<orientation>}{<angle>}.

\turnbox{}{-145} gives tourner ↗ de -145 degrés  
 \turnbox{gauche}{30} gives tourner ↙ de 30 degrés  
 You can also write \turnbox{g}{30} or \turnbox{G}{30}.

### 3.2.3 Loops

Obtained with

\boucle{<text>}{<number of blocks inside>}{<type>},  
 where <type> is an integer which can be equal to 1 (*repeat x times* or  
*repeat until*) or -1 (*forever loop*).

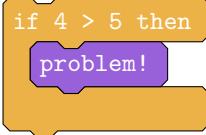
<pre>\boucle{repeat \$x\$ times}{2}{1} \scbox{two blocks}{red} \scbox{in the loop}{gray}</pre>	<p>makes</p> 
<pre>\boucle{forever loop}{3}{-1} \scbox{this time}{pink} \scbox{three blocks}{blue} \scbox{in the loop}{purple}</pre>	

*Notice that if you want to put a loop into another loop, you have to count the correct number of blocks inside the main loop. Actually, a loop counts for two blocks (without the inside blocks).*

### 3.2.4 If ... Then

*Notice that you get this command with the same syntax seen above. Actually:*

\boucle{if 4 > 5 then}{1}{2}.

<pre>\boucle{if 4 &gt; 5 then}{1}{2} \scbox{problem!}{app}</pre>	<p>produit</p> 
--	--

*Remark: in order to properly type the if...then test, see the small boxes in section 3.3.*

### 3.2.5 If ... Then ... Else

Obtained with

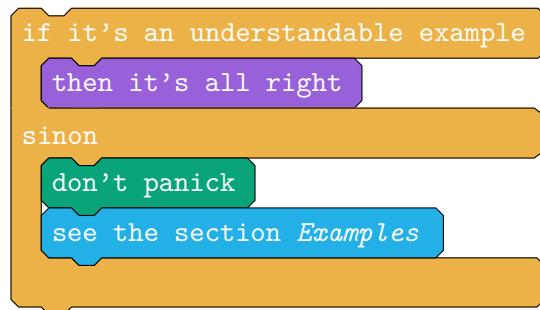
\sailors{<text>}{<number of blocks inside>}

```
et
\simenon{<number of blocks inside>}.
```

Typing:

```
\begin{Scratch}
\sailors{if it's an understandable example}{1}
\scbox{then it's all right}{app}
\simenon{2}
\scbox{don't panick}{stylo}
\scbox{see the section \emph{Examples}}{capt}
\end{Scratch}
```

you get:



### 3.2.6 More blocks

You get them with `\blocbox{<text>}`.

`\blocbox{triangle}` gives

### 3.2.7 Spécial control

It's for and .

These commands are obtained with `\kbox{<text>}`.

## 3.3 Inside the Scratch commands: the little boxes

How to get some specific commands, like: ?

How to type ?

or ? or even

```
change volume by [pick random 1 to 10] ?
```

### 3.3.1 The little rectangular boxes

- In the \scbox:  
obtained with  
`\rb[<color>]{<text>}`
- dans les \beginbox :  
you get them with  
`\rbb[<color>]{<text>}`

In both cases, <color> has by default the color of the box it is inside. In order to get a white rectangular box, you just have to put <color> at white or w.

Typing:

```
\begin{Scratch}
\scbox{play sound \rb{meow}}{son}
\scbox{think \rb[white]{Hmm\ dots}}{app}
\scbox{ask \rb[w]{What's your name?} and wait}{capt}
\end{Scratch}
```

you get:

```
play sound [meow v]
think [Hmm...]
ask [What's your name?] and wait
```

### 3.3.2 The small round boxes

They are hollowed or embossed.

You get them with

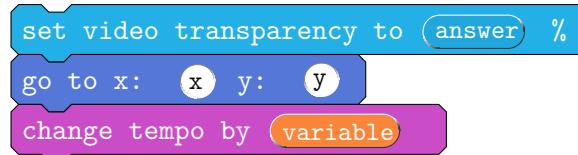
```
\cb[<color>]{<text>}
```

By default, <color> has the same color of the circular box it is inside. If <color> is white or w, the circular box is hollowed.

Typing:

```
\begin{Scratch}
\scbox{set video transparency to \cb{answer} \%}{capt}
\scbox{go to x:\cb[w]{x} y:\cb[white]{y}}{mvt}
\scbox{change tempo by \cb[data]{variable} }{son}
\end{Scratch}
```

you get:



### 3.3.3 The small hexagonal boxes

Only for *Sensing* et *Operators* commands.

You get them with

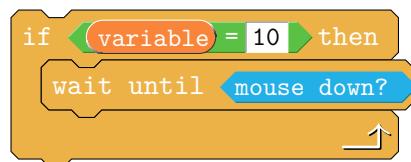
```
\hb[<color>]{<text>}
```

By default, <color> is ope.

Typing:

```
\begin{Scratch}
\boucle{if \hb{\cb[data]{variable}}=\rb[w]{10} then}{1}{1}
\scbox{wait until \hb{capt}{mouse down?}}{ctrl}
\end{Scratch}
```

you get:



### 3.3.4 The small squared boxes

Only for the colored squares.

You get them with

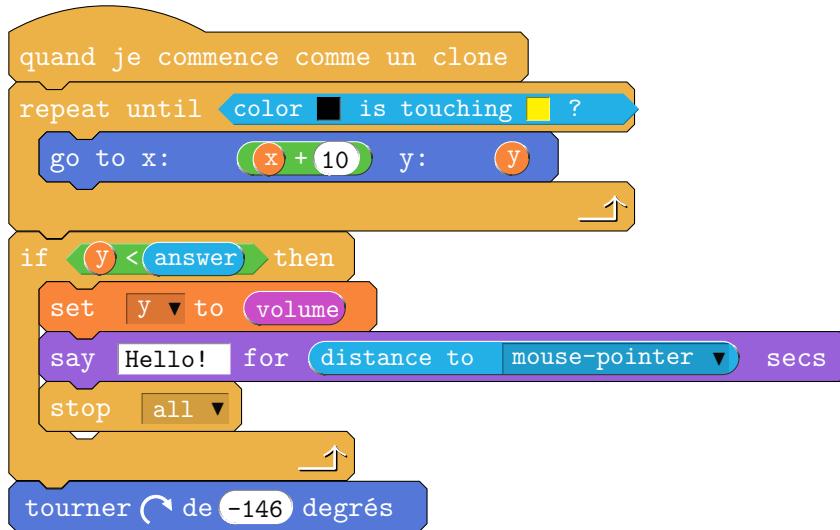
```
\sqb[<color>]
```

Typing:

```
\begin{Scratch}
\scbox{set pen color to \sqb{brown}}{stylo}
\end{Scratch}
```

you get: 

### 3.4 Intricate commands



Got with:

```
\begin{Scratch}
\begin{bbox}{clone}
\boucle{repeat until \hb{capt}{color \sqb{black}
is touching \sqb{yellow} ? }}{1}{1}
\scbox{go to x: \cb{ope}{\cb{data}{x}+\cb{w}{10}} y: \cb{data}{y}}{mvt}
\boucle{if \hb{\cb{data}{y}<\cb{capt}{answer}} then}{3}{1}
\scbox{set \rb{y} to \cb{son}{volume}}{data}
\scbox{say \rb{w}{Hello!} for \cb{capt}{distance to
\rb{mouse-pointer} } secs}{app}
\kbox{stop \rb{all}}
\turnbox{2}{-146}
\end{Scratch}
```

### 3.5 Other sort of commands

#### 3.5.1 In the loops

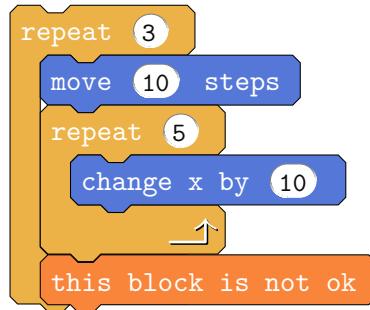
You need to use the command `\blank` when in the Scratch program, two loops ends at the same time.

Typing:

```
\begin{Scratch}
\boucle{repeat \cb{w}{3}}{4}{1}
\blank
```

```
\scbox{move \cb[w]{10} steps}{mvt}
\boucle{repeat \cb[w]{5}}{1}{1}
\scbox{change x by \cb[w]{10}}{mvt}
\scbox{this block is not ok}{data}
\end{Scratch}
```

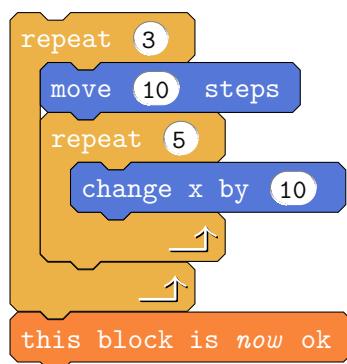
you get:



Whereas typing:

```
\begin{Scratch}
\boucle{repeat \cb[w]{3}}{4}{1}
\scbox{move \cb[w]{10} steps}{mvt}
\boucle{repeat \cb[w]{5}}{1}{1}
\scbox{change x by \cb[w]{10}}{mvt}
\blank
\scbox{this block is \emph{now} ok}{data}
\end{Scratch}
```

you get:

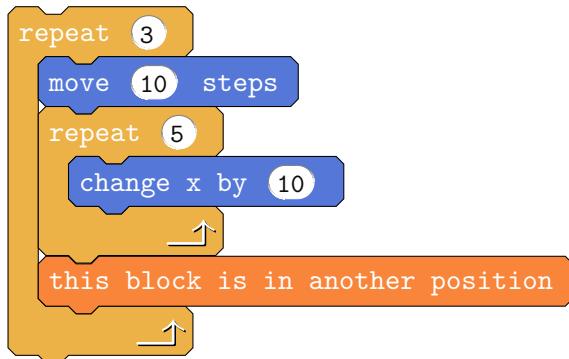


If you type:

```
\begin{Scratch}
\boucle{repeat \cb[w]{3}}{5}{1}
```

```
\scbox{move \cb[w]{10} steps}{mvt}
\boucle{repeat \cb[w]{5}}{1}{1}
\scbox{change x by \cb[w]{10}}{mvt}
\scbox{this block is in another position}{data}
\end{Scratch}
```

you get:



### 3.5.2 How to draw the cat

You can get the cover cat with:

```
\Scratchy[<scale>][<lines width>]
```

By default, the scale is 0.25 and the lines width is set at 0.25 pt.

Here is the code for the cover:

```
\parbox{1ex}{\Scratchy[0.1][0.1]}\\
\hspace{1cm}\parbox{1ex}{\Scratchy[0.2][0.2]}\\
\hspace{2cm}\parbox{1ex}{\Scratchy[0.5][1]}\\
\hspace{5cm}\parbox{1ex}{\Scratchy[0.75][1.5]}\\
```

## 4 Known problems and solutions

1. The black little triangle doesn't exist in the command *point in direction* (motion). You have to write it down.

```
\scbox{point in direction \cb[w]{90 \scriptsize$\blacktriangledown$}}{mvt}
```



point in direction 90 ▾

2. The height of the boxes is set. Therefor, you cannot put a lot of under-commands in a Scratch command.
3. When you need to put only one Scratch command into some text, it is not vertically centered. You can use a: \raisebox{-3mm}.
4. There is also a tiny horizontal gap. When a Scratch environment is over, you often need to add a \hspace{-1cm}.
5. The compile time is sometimes long!

## 5 Commands summary

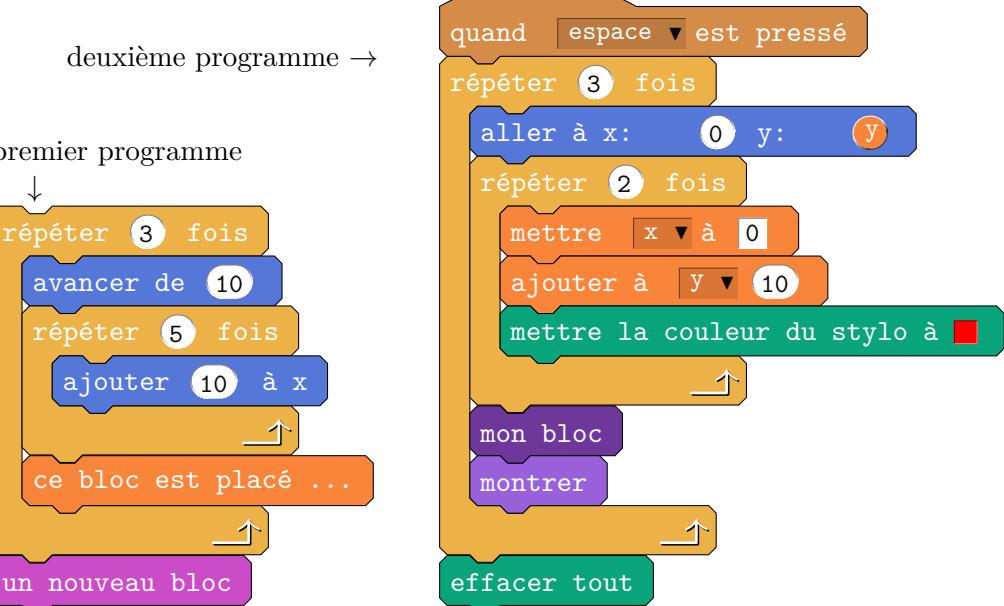
\beginbox{}	
\beginbox{<text>} (when this sprite clicked)	
\beginbox{clone}	
\blocbox{<text>}	
\turnbox{}{90}	
\turnbox{g}{-270} (or <left> or <G> or <g>)	
\scbox{<text>}{<color>}	
\boucle{repeat}{2}{1} ({<text>}{<nbr blocks>}{<type>})	
\boucle{forever}{1}{-1} ({<text>}{<nbr blocks>}{<type>})	
\boucle{if ... then}{1}{2} ({<text>}{<nbr blocks>}{<type>})	
\sailors{if...then...}{2} ({<text>}{<nbr blocks>})	
\simenon{<nbre blocks>} (ici, \simenon{1})	
\kbox{<text>}	

\rb{<text>}	variable ▾
\rb[w]{<text>}	text
\rbb{<text>}	when I receive message1 ▾
(only for \begin{boxedtikz})	
\begin{boxedtikz}[when I receive \rbb{message1}]	
\cb{<text>}	(answer)
(transparent)	
\cb[w]{<text>}	answer
(ou \cb[white]{<text>})	
\cb[<color>]{<text>}	answer
\cb[open]{answer}	
\hb{<text>}	answer
\hb[capt]{<text>}	answer
\sqb{<color>}	set pen color to ■

## 6 Examples of programs (in French):

```
\begin{Scratch}
\boucle{répéter \cb[w]{3} fois}{5}{1}
\scbox{avancer de \cb[w]{10}}{mvt}
\boucle{répéter \cb[w]{5} fois}{1}{1}
\scbox{ajouter \cb[w]{10} à x}{mvt}
\scbox{ce bloc est placé autrement}{data}
\scbox{un nouveau bloc}{son}
\end{Scratch}

\begin{Scratch}
\begin{inbox}{quand \rbb{espace} est pressé}
\boucle{répéter \cb[w]{3} fois}{8}{1}
\scbox{aller à x: \cb[w]{0} y: \cb[data]{y}}{mvt}
\boucle{répéter \cb[w]{2} fois}{3}{1}
\scbox{mettre \rb{x} à \rb[w]{0}}{data}
\scbox{ajouter à \rb{y} \cb[w]{10}}{data}
\scbox{mettre la couleur du stylo à \sqb{red}}{stylo}
\scbox{mon bloc}{bloc}
\scbox{montrer}{app}
\scbox{effacer tout}{stylo}
\end{inbox}
\end{Scratch}
```



## 6.1 Loops of loops

```
\begin{Scratch}
\beginbox{quand \rb{chronomètre} > \cb[w]{10}}
\sailors{si \hb{capt}{touche \rb{espace} pressée?} alors}{12}

\sailors{si \hb{capt}{souris pressée?} alors}{1}
\scbox{aller à x: \cb[w]{0} y: \cb[w]{0}}{mvt}

\simenon{2}
\scbox{donner la valeur \cb[w]{0} à x}{mvt}
\scbox{ajouter \cb[w]{10} à y}{mvt}

\sailors{si couleur \sqb{son} touchée?}{1}
\scbox{aller à x: \cb[w]{0} y: \cb[w]{0}}{mvt}

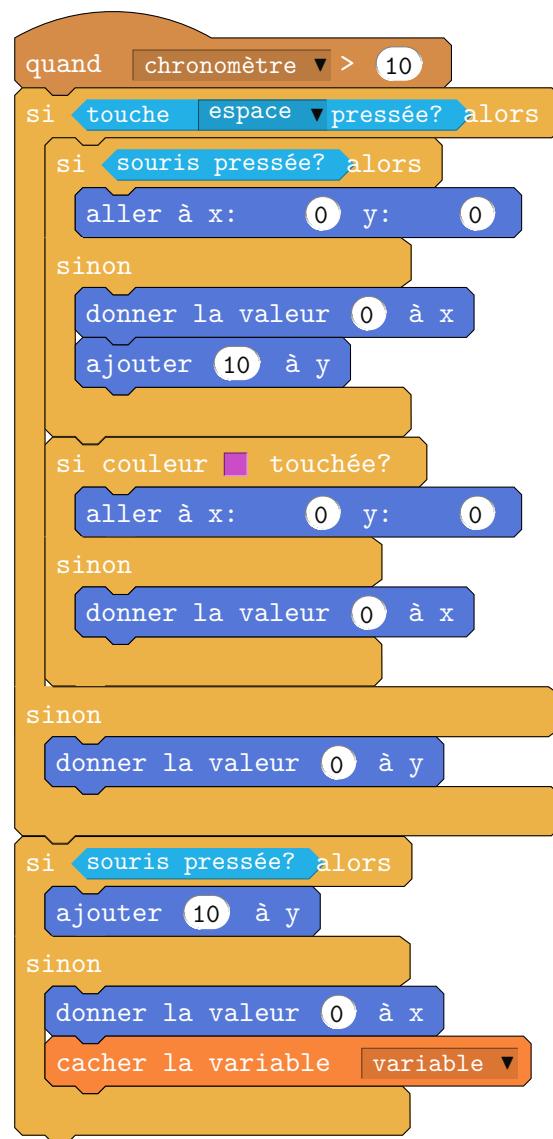
\simenon{1}
\scbox{donner la valeur \cb[w]{0} à x}{mvt}

\simenon{1}
\scbox{donner la valeur \cb[w]{0} à y}{mvt}

\sailors{si \hb{capt}{souris pressée?} alors}{1}
\scbox{ajouter \cb[w]{10} à y}{mvt}

\simenon{2}
\scbox{donner la valeur \cb[w]{0} à x}{mvt}
\scbox{cacher la variable \rb{variable}}{data}

\end{Scratch}
```



```
\begin{Scratch}
\beginbox{}

\sailors{si couleur \sqb{stylo} touchée?}{12}

\sailors{si \hb{capt}{souris pressée?} alors}{6}
\scbox{aller à x: \cb{w}{0} y: \cb{w}{0}}{mvt}

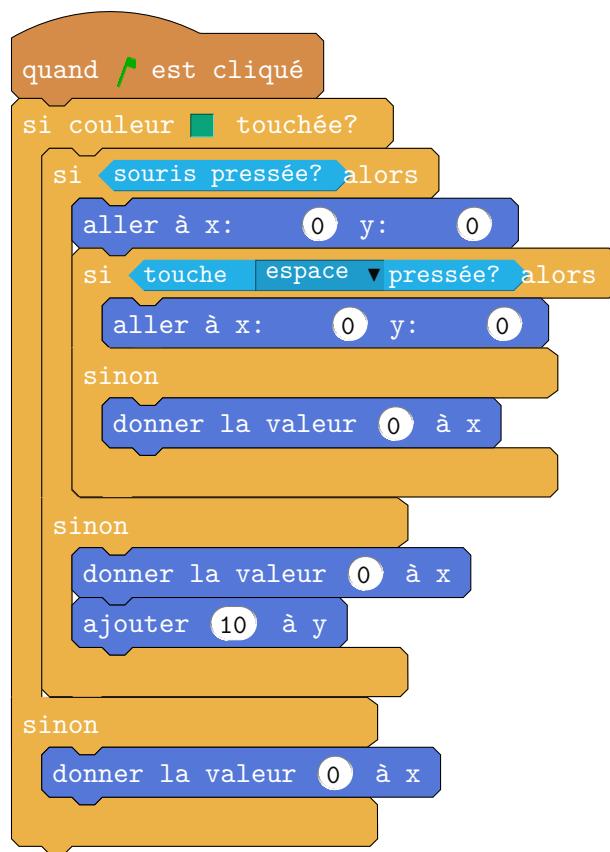
\sailors{si \hb{capt}{touche \rb{espace} pressée?} alors}{1}
\scbox{aller à x: \cb{w}{0} y: \cb{w}{0}}{mvt}

\simenon{1}
\scbox{donner la valeur \cb{w}{0} à x}{mvt}

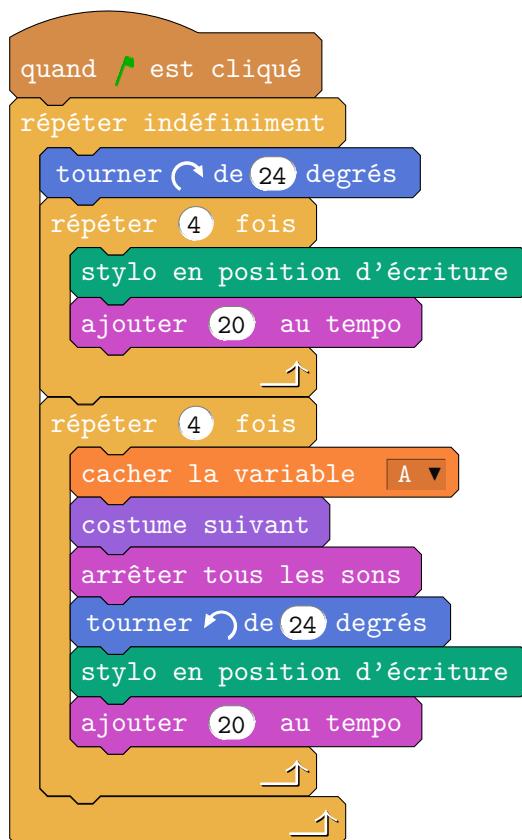
\simenon{2}
\scbox{donner la valeur \cb{w}{0} à x}{mvt}
\scbox{ajouter \cb{w}{10} à y}{mvt}

\simenon{1}
\scbox{donner la valeur \cb{w}{0} à x}{mvt}

\end{Scratch}
```



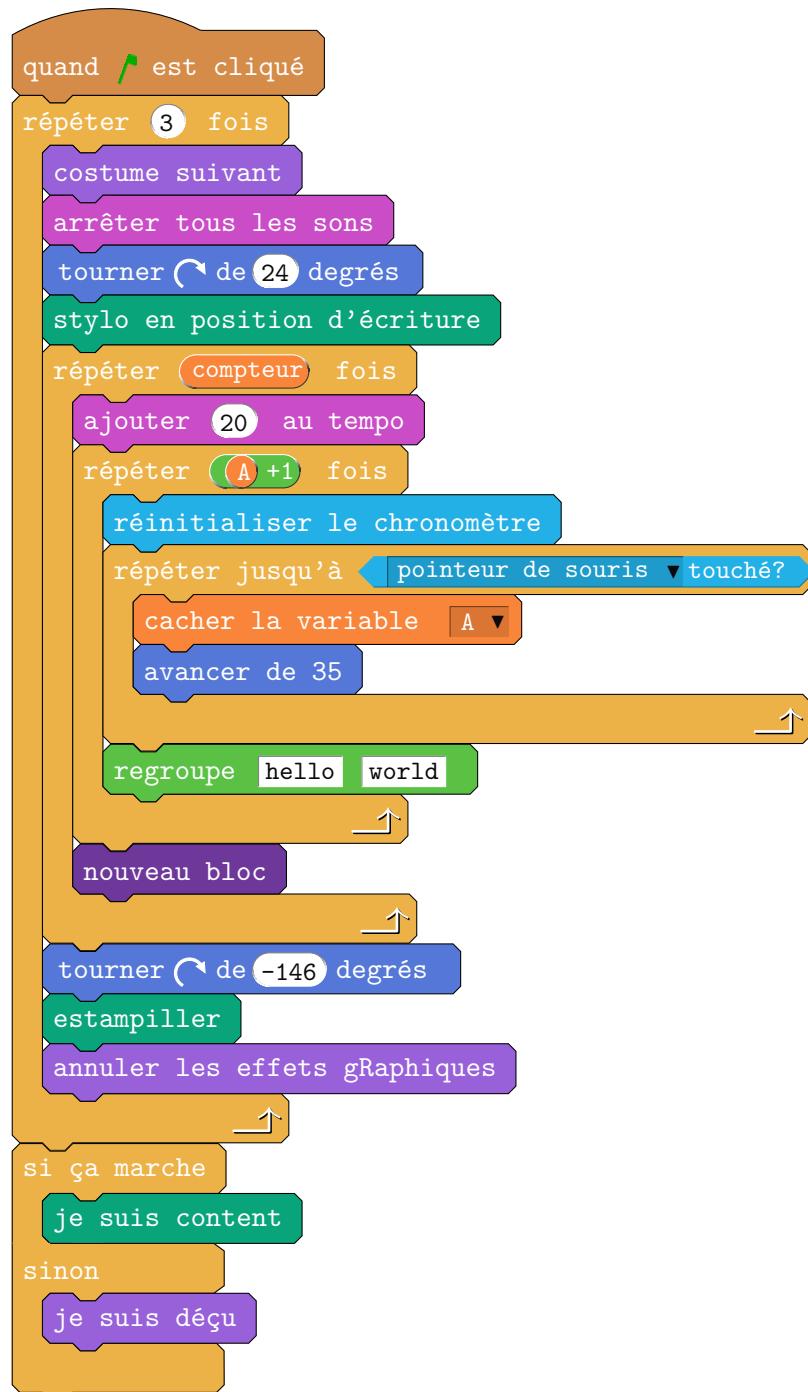
```
\begin{Scratch}
\begin{box}{}
\boucle{répéter indéfiniment}{13}{-1}
\turnbox{}{24}
\boucle{répéter \cb[w]{4} fois}{2}{1}
\scbox{stylo en position d'écriture}{stylo}
\scbox{ajouter \cb[w]{20} au tempo}{son}
\boucle{quand le lutin s'en va}{6}{1}
\scbox{cacher la variable \rb{A}}{data}
\scbox{costume suivant}{app}
\scbox{arrêter tous les sons}{son}
\turnbox{g}{24}
\scbox{stylo en position d'écriture}{stylo}
\scbox{ajouter \cb[w]{20} au tempo}{son}
\blank
\end{Scratch}
```



```
\begin{Scratch}
\beginbox{quand on le veut}
\boucle{répéter un certain nombre de fois}{8}{1}
\scbox{aller à x: \cb[w]{0} y: \cb[w]{0}}{mvt}
\boucle{le dernier ??}{2}{1}
\scbox{on peut faire}{gray}
\scbox{ce que l'on veut}{black}
\boucle{ne pas répéter}{1}{1}
\scbox{faux bloc}{brown}
\blank
\scbox{dernier bloc}{pink}
\end{Scratch}
```



```
\begin{Scratch}
\beginbox{}
\boucle{répéter \cb[w]{3} fois}{19}{1}
\scbox{costume suivant}{app}
\scbox{arrêter tous les sons}{son}
\turnbox{1}{24}
\scbox{stylo en position d'écriture}{stylo}
\boucle{répéter \cb[data]{compteur} fois}{10}{1}
\scbox{ajouter \cb[w]{20} au tempo}{son}
\boucle{répéter \cb[ope]{\cb[data]{A}+1} fois}{6}{1}
\scbox{réinitialiser le chronomètre}{capt}
\boucle{répéter jusqu'à \hb[capt]{\rb{pointeur de souris} touché?}}{2}{1}
\scbox{cacher la variable \rb{A}}{data}
\scbox{avancer de 35}{mvt}
\scbox{regroupe \rb[w]{hello}\rb[w]{world}}{ope}
\scbox{nouveau bloc}{bloc}
\turnbox{2}{-146}
\scbox{estampiller}{stylo}
\scbox{annuler les effets graphiques}{app}
\sailors{si ça marche}{1}
\scbox{je suis content}{stylo}
\simenon{1}
\scbox{je suis déçu}{app}
\end{Scratch}
```



## 7 Conclusion

Please feel free to leave a comment:

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Thank you!