

Lesson 14 (60 minutes)

In-depth study of SARA

Material

information: this lesson works both in the desktop version and in the web version.

1. Computers / Ipads with internet connection

Lesson overview

5 min Introduction (Meeting place)

- Greet everyone.
- Tell us what will happen during today's lesson.

10 min Teacher-led - the grid becomes a chessboard

10 min Students test 2-2

5 min Joint repetition of different commands in kojo

20 min : students make their own chess piece in a kojo

10 min Rounding (Meeting place)

- Repetition of all parts of SARA: sequence, alternative, repetition and abstraction
- Hi then until next week.

Teaching

Distribute computers and all students start the kojo application

- Joint / teacher-led start
- Make sure everyone has the grid code from the previous lesson
- Students draw a grid.

1. teacher-led start

in the previous lesson we build a grid, but it is not a chessboard yet, we need to fill every other box

show the film about some useful commands (fill, penColor, ...jumpTo)

Film: · Useful commands : <https://youtu.be/2MgrQKfAZ-Q>

Have students test and with the fill function `setFillColor(colour)`

Start with filling a square with different colours.

```
def square = {repeat (4) {forward; left}}
setFillColor(black)
square
```

Discuss together how we can fix the filling of every other box.

```
def square = {repeat (4) {forward; left}}
setFillColor(black)
square
hop
setFillColor(white)
square
```

and how to get a bar. Let the students test to solve the problem first on their own.

Discuss some possible solutions. Here is one of them:

```
def square = repeat (4) {forward; right}
def bar= {repeat (4) {setFillColor (black)
square
hop
setFillColor(white)
square
hop}
}
bar
```

2) In groups 2-2: the students now end their grid code with the above code for filling and test so that it becomes a chessboard.

Tip: Two different bars are needed.

This is a more advanced exercise. You can give them a part of a code and the students complete the code.

bar 1 starts with a black square, bar 2 starts with a white box:

here is the code for bar 1:

```
def square = repeat (4) {forward; right}
def bar1= {repeat (4) {setFillColor (black)
square
hop
setFillColor(white)
square
hop}
}
```

Asked the students how to change the code. Here is the code for bar 2:

```
//def square = repeat (4) {forward; right}
def bar2= {repeat (4) {setFillColor (white)
square
hop
setFillColor(black)
square
hop}
}
```

Now you can make a chessboard:

```
def chessboard = {
repeat (4) {
  bar1
hop(-200)
  right
  forward
  left
bar 2
hop(-200)
  right
  forward
  left
}}
chessboard
```

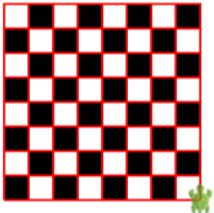
If you want to have it faster choose : **setSpeed(fast)** at the beginning of your code.

iKojjo
Run
Stop/Reload
Save
Help / Docs
Sign in with C

```

1
2 def square = repeat (4) {forward; right}
3 def bar1= {repeat (4) {setFillColor (black)
4 square
5 hop
6 setFillColor(white)
7 square
8 hop}
9 }
10
11 def bar2= {repeat (4) {setFillColor (white)
12 square
13 hop
14 setFillColor(black)
15 square
16 hop}
17 }
18
19 def chessboard = {
20 repeat (4) {
21 bar1
22 hop(-200)
23 right
24 forward
25 left
26 bar2
27 hop(-200)
28 right
29 forward
30 left
31 }}
32
33 sakta(20) //makes it faster
34 chessboard
35
36

```



3) Supplements for students who are far ahead: Writing notation

let some students try to figure out how to do the notation code.

But it takes A, B, C,...

With the write function you can fix it!

write("A")

hop

write("B")

hop

write("C")

hop

write("D")

hop

write("E")

hop

write("F")

hop

write("G")

hop

write("H")

hop(-200)

and so it is taken 1,2,3,...

try different ways to do it! Use **invisible**, then the turtle is not visible and with **setPenColor (green)** you change the colour of the pen

right

forward

left

write ("1 2 3 4 5 6 7 8") or maybe better with

write ("1 2 3 4 5 6 7 8")

try with different spaces between the numbers to get it right.

4. teacher-led

show the notation code, discuss in class how to get it right with space between the numbers.

or give the students the code and they try by themselves.

Now we soon have a chessboard and can play! Show the whole program and/or give the code to the students.

setSpeed(fast)

def square = repeat (4) {forward; right}

def bar1 = {

repeat (4) {setFillColor(black)

square

hop

setFillColor(white)

square

hop}

}

def bar2= {

repeat (4) {setFillColor (white)

square

hop

setFillColor(black)

square

hop}

}

```
def chessboard = {  
  repeat (4) {  
    bar1  
    hop(-200)  
    right  
    forward  
    left  
    bar2  
    hop(-200)  
    right  
    forward  
    left  
  }  
}
```

```
write("A")  
hop  
write("B")  
hop  
write("C")  
hop  
write("D")  
hop  
write("E")  
hop  
write("F")  
hop  
write("G")  
hop  
write("H")  
hop(-200)  
setPenColor(noColor)  
right  
forward  
left
```

```
setPenColor (red)
```

```
write ("1      2      3      4      5      6      7      8")
```

```
setPosition (25, -20)
```

```
chessboard
```

Try out to start at the right position for the notation and/or the chessboard. Choose `setPosition(-25,25)` or a similar one.

Compare the students' results with the commands board and notation.

5) Joint / teacher-led: what commands do we know?

Repetition of different commands in kojo

Together with the students, you make a list of different commands:

```
forward, right, left, backward()
```

```
circle (50)
```

```
fill (colour)
```

and many more....

You find a list in appendix 1 for this lesson.

5) Group 2-2: each student draws their own chess piece in a kojo.

Encourage students to use all parts of SARA. Encourage the exchange of ideas and especially programming tips.

6) Show some students' results at the end of the lesson.

Ask students to present their pieces and look at the code together. Praise the results.

Rounding

When there are five minutes left in the lesson, tell the children to pack up. You gather at Meeting place and the teacher summarizes what the children have learned during the lesson.

5 min Rounding (Meeting place)

- Repeat all concepts in SARA
- Everyone does the sequence together:

stand - repeat (4) {jump; spin} - "Hello then" - jump - "thank you for today" - if (black shoes) wave otherwise {jump} - sit

- Hi then until next week.