

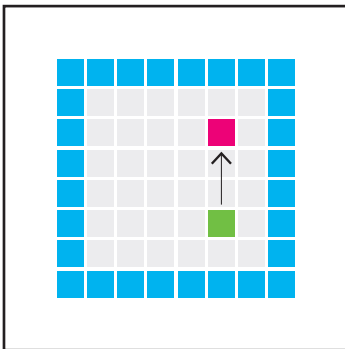
WORKSHEET W021

SIMPLE SNAKE

You are now ready to program a more complex game.

EXERCISE

Program a simple version of the classic retro game: Snake!



In this simplified version, the snake does not grow and the game ends when you touch the edge of the playing field.

First create the following functions: drawPlayfield, drawApple, drawSnake, deleteSnake and gameOver. Think carefully about which blocks belong in which function. For example, with a gameOver, you can play a „crash“ sound effect, display the points you’ve collected, and then restart.

You can now use these functions in your game. When programming a game, you can always stick to the following procedure.

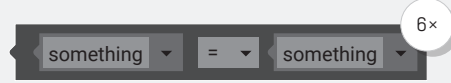
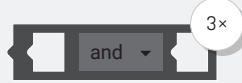
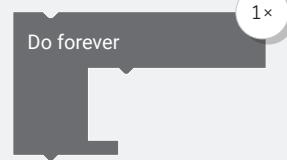
One-time:

1. Initialize game (define variables, set start position, draw static game elements, etc...)

Over and over:

2. Delete variable game elements
3. Read events (button press, acceleration, etc...)
4. Draw variable game elements
5. Process and execute events (check collisions, check victory/end conditions, etc...)
6. Wait a short time (game speed)

LOGIC

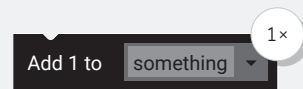
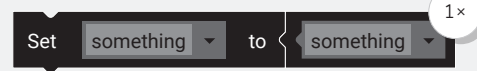


PARTS LIST LIST OF BLOCKS TO BE USED

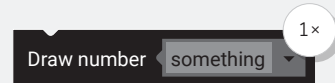
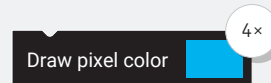
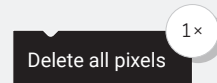
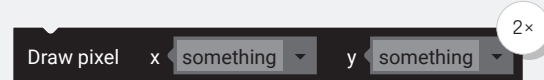
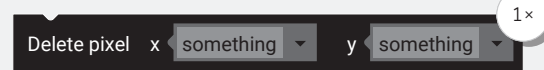


LEVEL EXPERT

VARIABLES



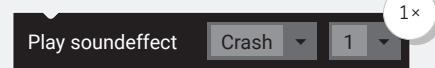
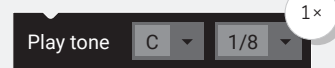
MATRIX



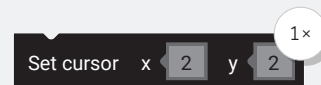
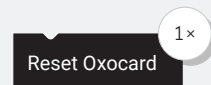
TIME



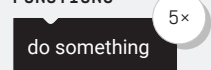
SPEAKER



ACCELERATION



FUNCTIONS



SOLUTION

PROPOSED SOLUTION

The main game loop code consists of the following blocks:

- Set **points** to **0**
- Set cursor x **2** y **2**
- drawSnake
- drawField
- drawApple
- Do forever loop:
 - deleteSnake
 - drawSnake
 - If **xHead = xApple** and **yHead = yApple** then:
 - Add 1 to **points**
 - Play tone **C** **1/8**
 - drawApple
 - If **xHead < 1** or **xHead > 6** then **gameOver**
 - If **yHead < 1** or **yHead > 6** then **gameOver**
 - Wait **200** milliseconds

The drawField function code consists of the following blocks:

- Set pixel color (blue)
- Draw rectangle x **0** y **0** width **8** height **8**

The drawApple function code consists of the following blocks:

- Set **xApple** to random from **1** to **6**
- Set **yApple** to random from **1** to **6**
- Set pixel color (pink)
- Draw pixel x **xApple** y **yApple**

more on the next page

```
drawSnake
  Set xHead to get cursor X
  Set yHead to get cursor Y
  Set pixel color
  Draw pixel x xHead y yHead
```

```
deleteSnake
  Delete pixel x xHead y yHead
```

```
gameOver
  Play soundeffect Crash 1
  Delete all pixels
  Set pixel color
  Draw number points
  Wait 3000 milliseconds
  Reset Oxocard
```

WORKSHEET W021

SIMPLE SNAKE

Learning objective:

Capacity to handle a more complex programming task and to work with several functions.

WHAT TO DO

1.

First you initialize the point variable with zero, set the starting position of the cursor, and draw all game elements (snake, playing field and apple).

2.

Then the «Do forever» loop is needed. All other blocks must be positioned in this loop.

3.

Now first delete the pixel of the old snake and draw the new pixel at the next position with the help of the «get cursor» block.

4.

Check whether the position of the snake corresponds to that of the apple. If this is the case, raise the point variable, play a short note and draw the apple at a new random position.

5.

Also check the final condition by asking if the snake is in the playing field. If this is not the case you call the gameOver function.

6.

At the end comes a short «Wait» block. This determines the game speed.

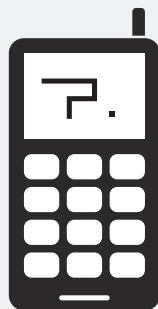
NO NEW COMMANDS

ADDITIONAL INFORMATION: SNAKE

The Snake game was developed and published in 1976 by the American arcade game company „Gremlin“. But it only became really known about 20 years later when the company „Nokia“ preinstalled the Snake game on most of their mobile phones.

Even today the game is programmed and played in all possible variations.

Due to the complexity, versatility and scalability of the game, it finds its way into almost every programming class.



The company «Nokia» had already pre-installed the game «Snake» on most of its mobile phones.