

# GeoGebraBooks

with **Python** example on topics:

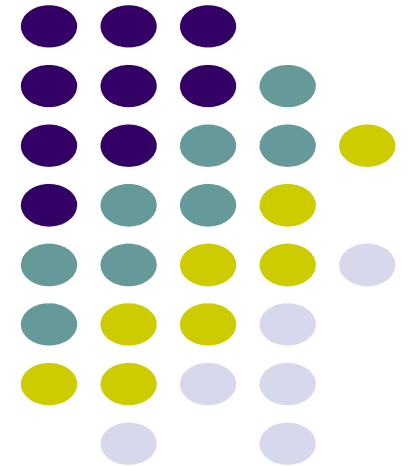
- Discrete math

- <https://www.geogebra.org/m/oz0TtfO8>

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- GeoGebra, Python and Makey Makey for Games

- <https://www.geogebra.org/m/SzNEt83y>



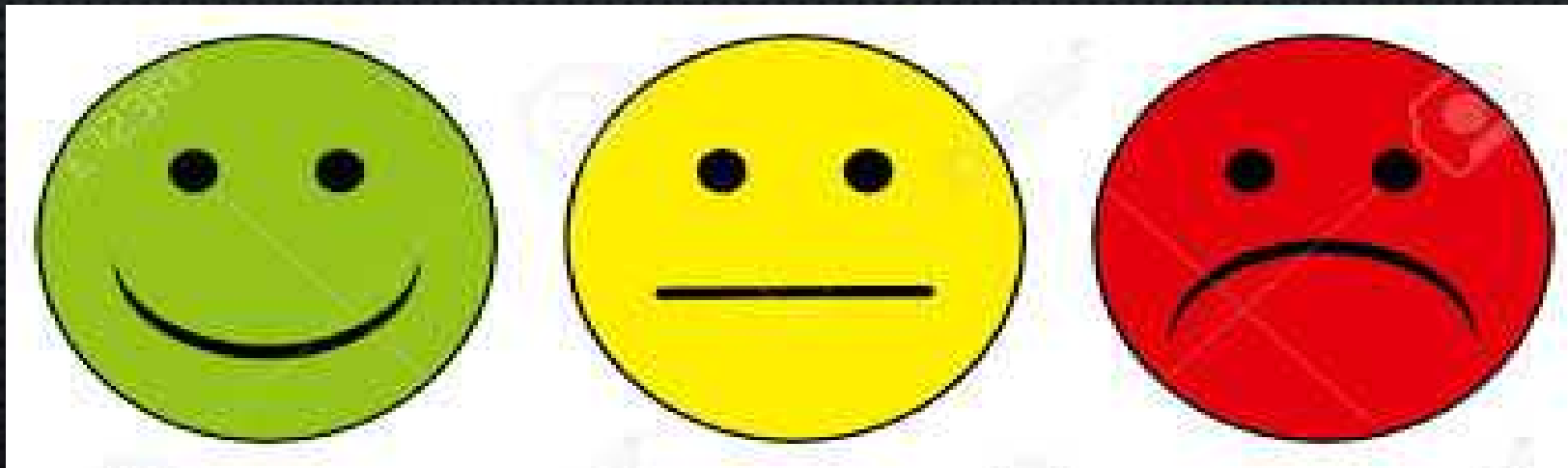
# GeoGebra, Python and Makey Makey in Teaching and Learning Math and CS through Game Design



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**GAME <-> EDUCATION**

**FUN <-> BOREDOM**





**GAME <-> EDUCATION**

**FUN <-> BOREDOM**

- Gamification
- Educational games (and game-like simulations)
- Game design (learning through making)

# GAMIFICATION



# Gamification is

the use of game elements and game design techniques in non-game contexts

The screenshot displays a fitness app interface with several gamified features:

- My Goals & Challenges:** Shows 1 Medal (a gold coin with a '2') and 1 Trophy (a gold cup).
- My Farthest Run:** A yellow diamond-shaped sign indicating a distance of 4.01 mi.
- My Fastest Runs:** A digital display showing three time intervals: 8'15" (1 MI), 30'37" (5K), and 0'00" (10K).
- 2010 Challenge:** A red badge with the Nike logo and '2010'. Text below reads: "See how you did in 2010 then fire up to run even better in 2011." with a "CHECK STATS" button.
- Weekly Run Goal:** A green and yellow pill-shaped graphic with a runner silhouette. Text below reads: "You run 0 times a week on average. Make it 1 with a monthly goal." with a "SET A GOAL" button.
- Training Program:** A bar chart with a runner silhouette. Text below reads: "You run most on Wednesday. Add more days to the mix with a training program." with a "SET A PROGRAM" button.

# Gamification. Example





# Gamification. Example





# EDUCATIONAL GAMES

# Learn & Play





**for NOVICE in Python**

# Code.org/learn



## Класичний лабіринт

Вчіться програмувати з Марком Цукенбергом та Злими птахами!



## Створіть гру Пурха

Створіть власну гру - Пурха, Акулу чи Підводного човна



## Ігрова лабораторія

Створіть гру або історію за участі персонажів Діснея Infinity.



## Зоряні війни: Закодуємо далеку Галактику

Навчись програмувати дроїдів, створи власну гру Зоряних воєн у далекій-далекій галактиці.



## Програмуємо з Анною та Ельзою

Вивчимо програмування, приєднавшись до Анни та Ельзи у подорожі чарівною зимовою казкою.



## Година коду від Майнкрафт

Використайте блоки коду, щоб допомогти Стіву чи Алекс в їхніх пригодах у світі Майнкрафт.



# Teacher's Page

## Домашняя страница Преподавателя



Учетные записи и прогресс студента



Твой прогресс в обучении



Планы уроков и ресурсы



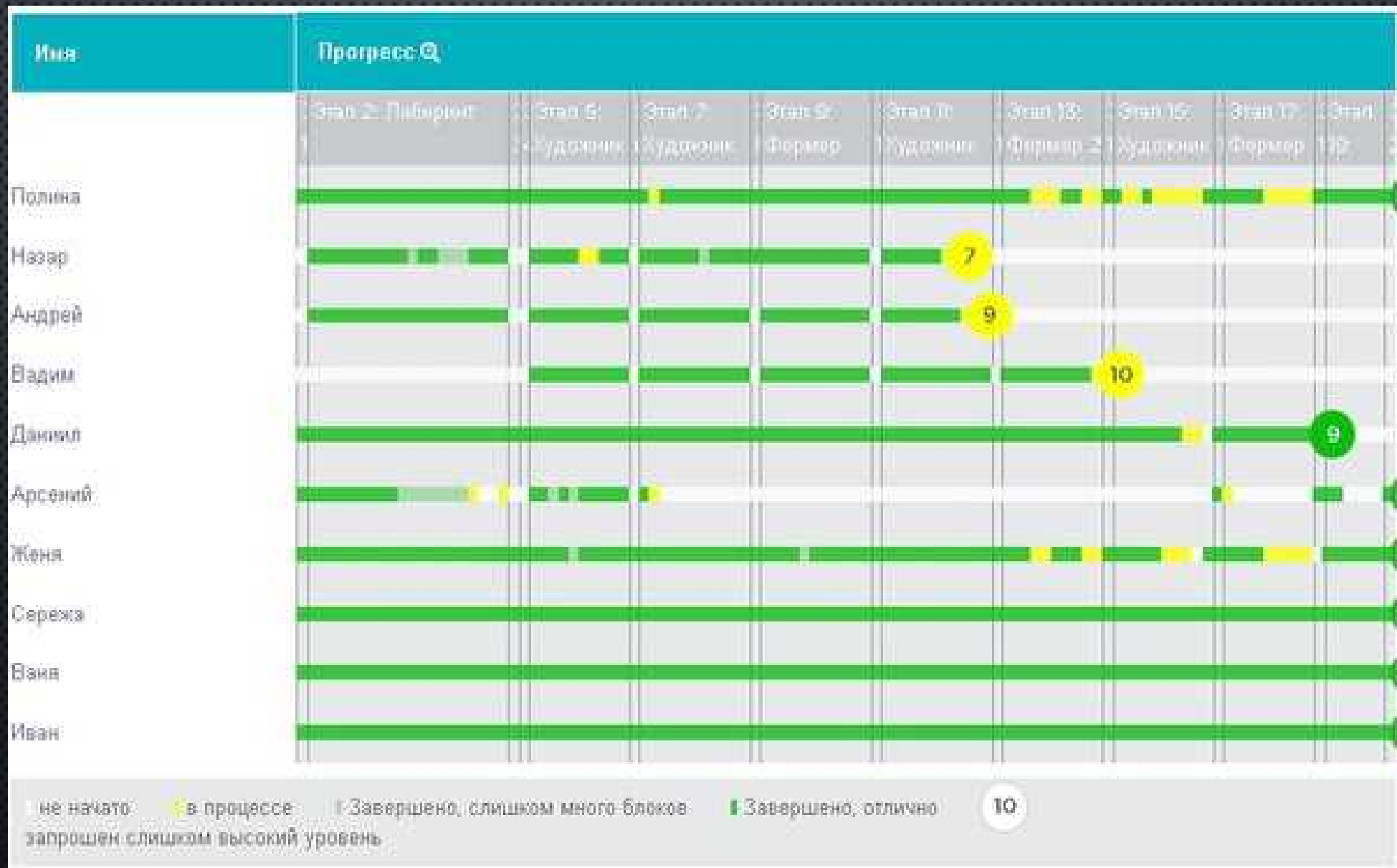
Помощь и сообщество



Профессиональная разработка



Информатика приглашенные ораторы





# MINECRAFT



## Blocks

move forward

turn left

turn right

when run

move forward



Run

Hit "Run" to try your program



Add a second "move forward" command to reach the sheep.



▶ Выполнить



«Собери всех Пилоты Повстанцев как можно быстрее».

Блоки

- иди вверх
- иди вниз
- иди влево
- иди вправо
- когда клавиша вверх:
  - иди вверх
- когда клавиша вниз:
  - иди вниз
- когда клавиша влево:
  - иди влево
- когда клавиша вправо:
  - иди вправо



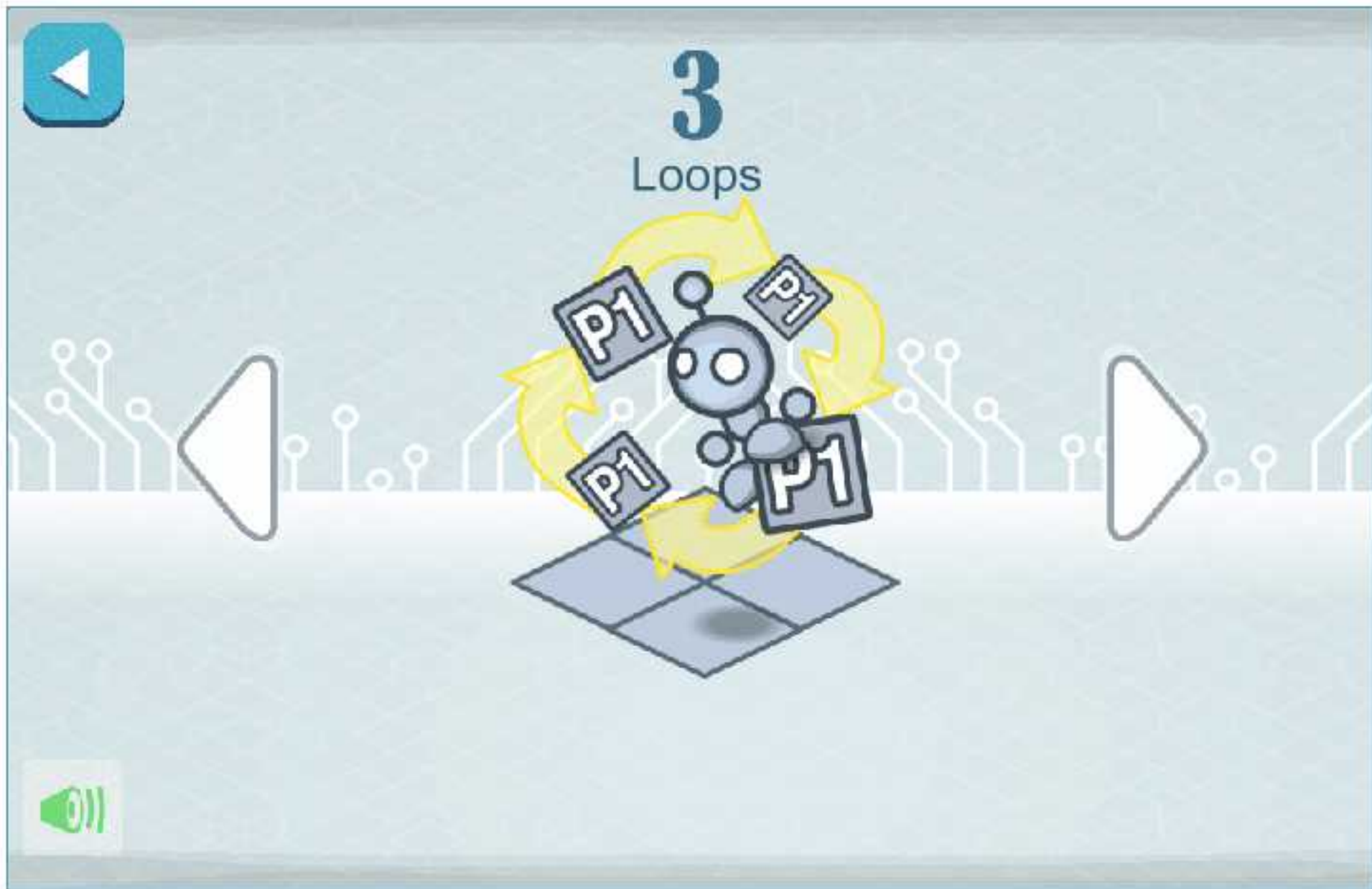
# lightbot™

Program Lightbot to **light up** all of the **blue** squares!

Language Select and Full Screen options can be found in the game menu along the right side.

The screenshot shows the main interface of the Lightbot game. In the top left corner, there is a 'Fullscreen' button and a small purple robot icon. The center of the screen features the 'lightbot' logo and a larger grey robot character standing on a green rectangular platform with a white play button icon. To the right of the robot is a grid of 28 circular icons representing various national flags, arranged in 7 rows and 4 columns. At the bottom left, there is a speaker icon. At the bottom center, there is a floppy disk icon and the text 'Slot1'.

Language Select and Full Screen options can be found in the game menu along the right side.





## Обучающее руководство на Вашем языке

The image shows a tutorial screen for the game Lightbot. It features a central robot character, a maze with a yellow starting square, and a code editor. The code editor contains the following code:

```
PROC1  
↑ P1  
PROC1
```

A red dashed line indicates a loop between the two PROC1 labels. A speech bubble next to the code says: "You can use the P1 command inside PROC1 to make a loop!".

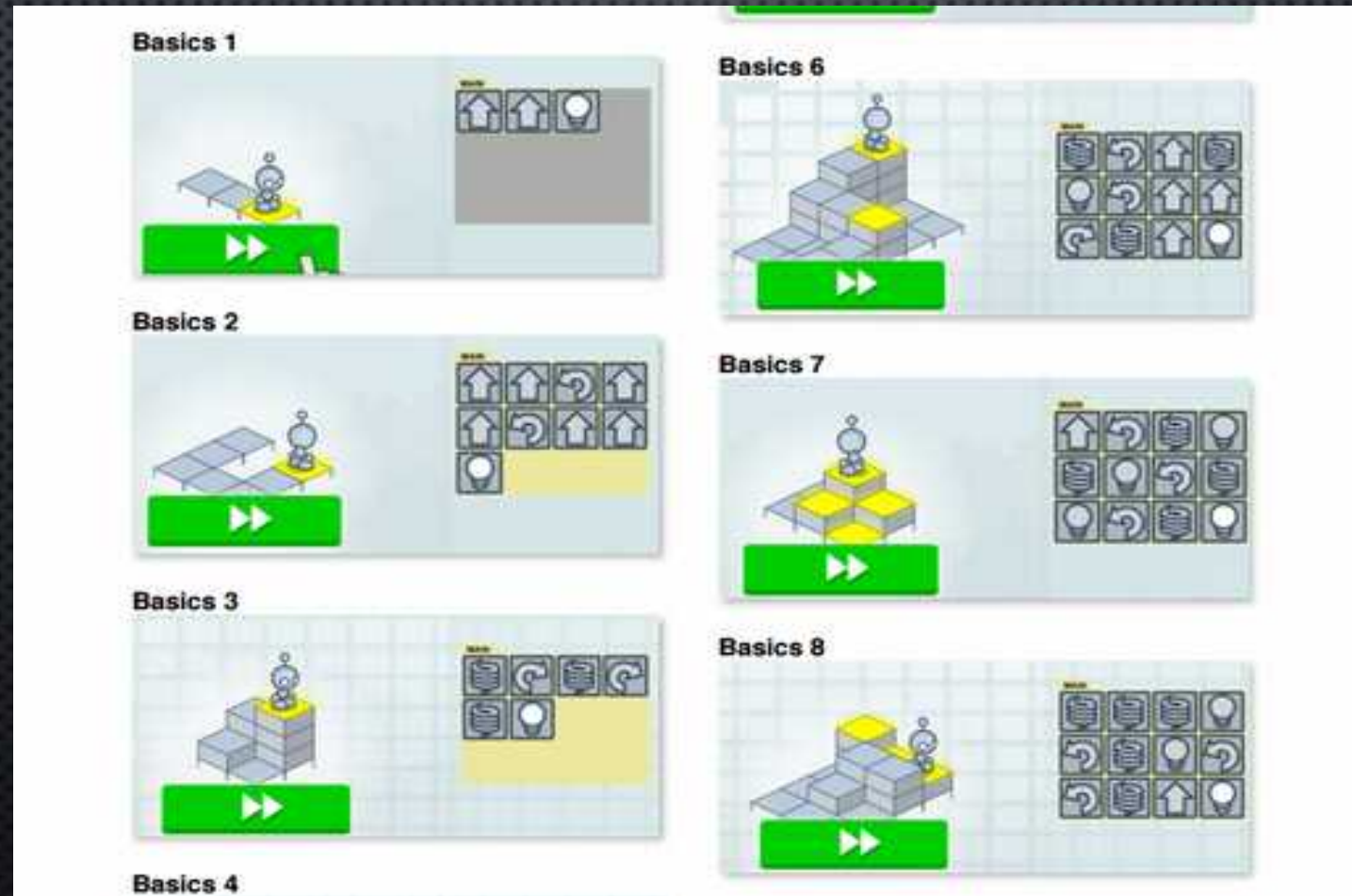
Lightbot

Старт



# Tutorial

<https://lightbot.com/LightbotSolns.pdf>





# codecombat.com







ИГРАТЬ

HOUR OF CODE?

I HAVE A CLASS CODE

[О НАС](#) [СВЯЗАТЬСЯ](#) [БЛОГ](#) [КАРЬЕРА](#) [ЮРИДИЧЕСКАЯ ИНФОРМАЦИЯ](#) [СОТРУДНИЧЕСТВО](#) [МУЛЬТИПЛЕЕР](#)



ПОДЗЕМЕЛЪЕ КИТГАРДА  
17/39





# ПРЕДМЕТЫ

906



Все Воин Рейнджер Волшебник

- РАЗНОЕ
- АКСЕССУАРЫ
- ОСНОВНОЕ
- ВТОРОСТЕП...
- БРОНЯ
- КНИГИ

ОБСИДИАНОВЫЙ НАГРУДНИК	ОБСИДИАНОВЫЙ ШЛЕМ	РЕЗНОЙ ОБСИДИАНОВЫЙ НАГРУДНИК
620	660	100
РАЗБЛОКИРОВАТЬ	РАЗБЛОКИРОВАТЬ	РАЗБЛОКИРОВАТЬ
1600	1200	2500
РАЗБЛОКИРОВАТЬ	РАЗБЛОКИРОВАТЬ	РАЗБЛОКИРОВАТЬ
РЕЗНОЙ ОБСИДИАНОВЫЙ ШЛЕМ	УРОВЕНЬ 16	УРОВЕНЬ 16
1700	ЗАБЛОКИРОВАНО	ЗАБЛОКИРОВАНО
РАЗБЛОКИРОВАТЬ		







```
1 // Собери все самоцветы используя команды перемещения.  
2  
3 this.moveRight();  
4 this.moveDown();  
5 this.moveUp();  
6 this.moveUp();  
7 this.moveRight();  
8  
9
```

ЗАПУСТИТЬ ГОТОВО

Помощь

```
this.moveDown();  
this.moveLeft();  
this.moveRight();  
this.moveUp();
```





```
1 // Выживите под напором огров.
2 // Если вы выиграете, то уровень станет тяжелее, а награда за
  победу больше.
3 // Если вы проиграете, то сможете попробовать опять только через
  день.
4 // Уровень меняется каждый раз при попытке прохождения.
5 while(true){
6   var enemies = this.findEnemies();
7   for(var i=0;i<enemies.length;i++){
8     this.attack(enemies[i]);
9   }
10 }
11
```

В ПРОЦЕССЕ ЗАВЕРШИТЬ IN A DAY

Помощь

distanceTo(target)	moveDown()	else
findByType(type, -)	moveLeft()	if/else
findEnemies()	moveRight()	loop
findFriends()	moveUp()	isReady(action)
findItems()	findFlag(color)	now()
findNearest(units)	pickUpFlag(flag)	attack(target)
say(message)	pos	cleave(target)
		shield()

THARIN 183



LEVELS

GAME

CURRENT PLAN

RELOAD

- ✓ Dodge the fireballs forever.
- ✓ Under 4 statements.

GOALS: SUCCESS!

# VICTORY



+11



+10

JUMP TO THE LEFT. STEP TO THE RIGHT. REPEAT.



+6



+5

CLEAN CODE: NO CODE ERRORS OR WARNINGS.



+6

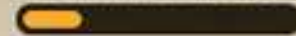


+5

DONE IN FEWER THAN 4 CODE STATEMENTS.

+23

XP GAINED - LEVEL 7



+20

GEMS GAINED

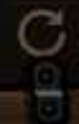
CONTINUE

x: 20, y: 29]

ONE

ank(target)

ANY





# INVENTORY

139



## FINE WOODEN GLASSES



### LOCKED



Change Hero

Play

Lets you find arrays of items and find the nearest item separately.

### SKILLS GRANTED

**distanceTo:** Returns the distance in meters to the **target** unit from the center of the hero.

**findItems:** Returns an array of all items (example types 'coin', 'gem', 'health-potion') within eyesight ( **visualRange** m and line-of-sight).

**findNearest:** Returns the closest unit out of an array of units, or null if the array is empty.

**findNearestEnemy:** Returns the closest living enemy within eyesight ( **visualRange** m and line-of-sight), or null if there aren't any.

**findNearestItem:** Returns the closest item within eyesight ( **visualRange** m and line-of-sight), or **null** if there aren't any.

Unequip



# Первый уровень





# Second Level



0/48



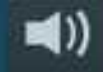
595 LEVEL 10  
codecombat.com



LOG OUT







Доступные бесплатные уровни.  
Открываются по мере прохождения



**KITHGARD DUNGEON**  
19/39

PLAY

1-3 hours: syntax, methods, parameters, strings, loops, variables



**BACKWOODS FOREST**  
0/48

PLAY

2-6 hours: if/else, relational operators, object properties, input handling



**SARVEN DESERT**  
0/41

LOCKED

4-11 hours: arithmetic, counters, while-loops, break, arrays, string comparison, finding min/max



**CLOUDRIP MOUNTAIN**  
0/42

LOCKED

Object literals, remote method invocation, for-loops, function drawing, modulo



# БИТВЫ. Много игроков

## MULTIPLAYER ARENAS

... in which you code head-to-head against other players.



**ACE OF CODERS**

DIFFICULTY: ★★ ★ - 14703 PLAYERS

PLAY

The banner for 'Ace of Coders' features a central title in large, yellow, bubbly letters. On the left, a large, muscular character with a red and white striped shirt and a red 'C' on his chest stands prominently. To the right, another large character in blue and white armor is shown. The background is a snowy, icy arena with other smaller characters in the distance.



**ZERO SUM**

DIFFICULTY: ★★ ★ - 4663 PLAYERS

PLAY

Battle for control over the icy treasure chests as your gigantic warrior marshals his armies against his mirror-match nemesis.

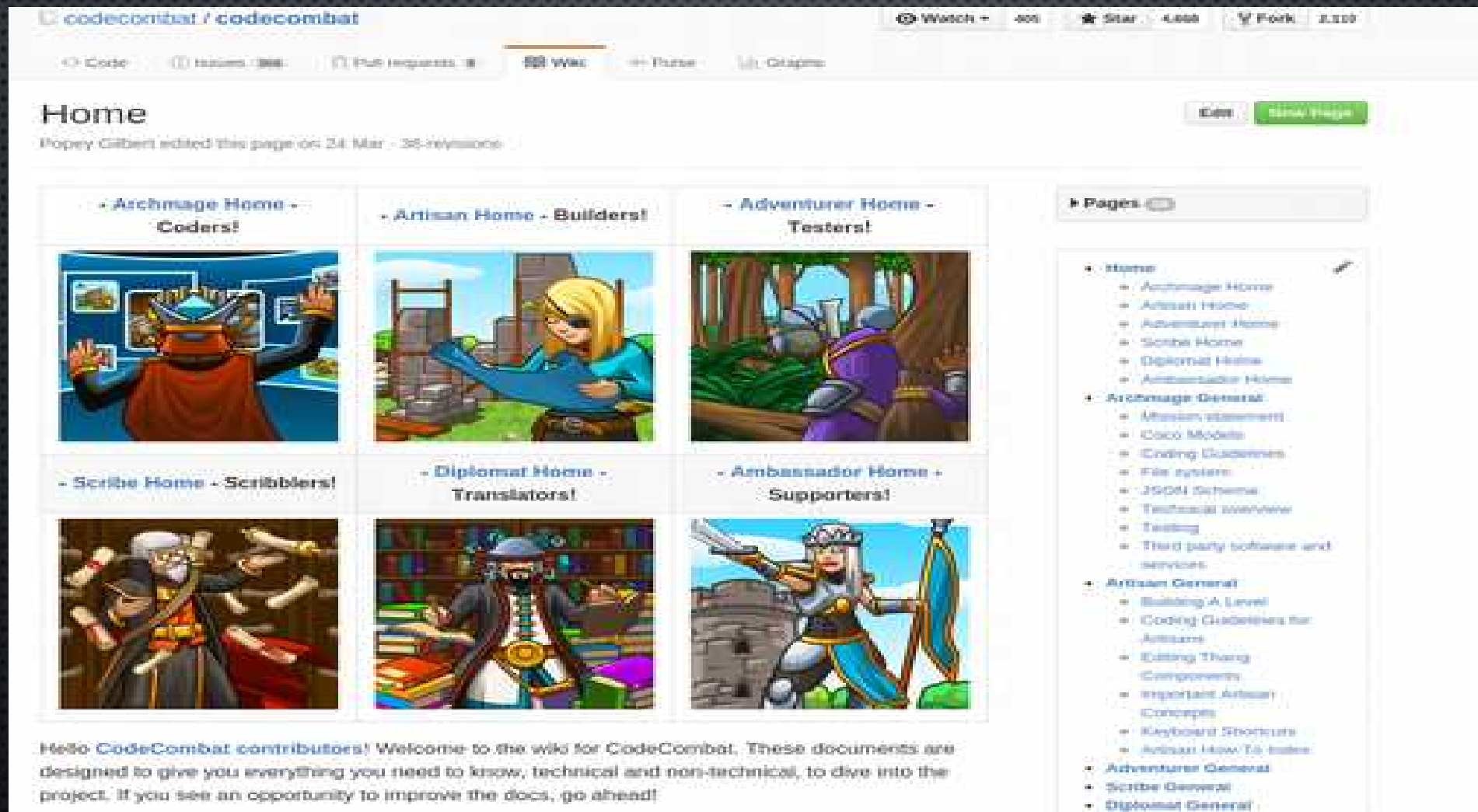
The banner for 'Zero Sum' features a central title in large, yellow, bubbly letters. On the left, a character in a golden Egyptian-style headdress is shown. To the right, a character in blue and white armor is shown. The background is a snowy, icy arena with other smaller characters in the distance.

[bat.com/play/ladder/ace-of-coders](http://bat.com/play/ladder/ace-of-coders)



# Open Source Project

<https://github.com/codecombat/codecombat/wiki>



The screenshot shows the GitHub Wiki for CodeCombat. At the top, it displays the repository name 'codecombat / codecombat' with statistics: 400 Watchers, 4,000 Stars, and 2,100 Forks. Below this is a navigation bar with tabs for Code, Issues (366), Pull Requests (8), Wiki (selected), Tours, and Graphs. The main heading is 'Home', with a note that 'Poppy Gilbert edited this page on 24 Mar - 38 revisions'. There are 'Edit' and 'Link Page' buttons. The content is organized into a grid of six sections, each with a title and an illustration:

- Archmage Home - Coders!**: Illustration of a red-robed archmage with a staff.
- Artisan Home - Builders!**: Illustration of a blonde artisan holding a blue blueprint.
- Adventurer Home - Testers!**: Illustration of a purple-clad adventurer in a forest.
- Scribe Home - Scribblers!**: Illustration of a scribe with a quill pen.
- Diplomat Home - Translators!**: Illustration of a diplomat in a blue and white robe.
- Ambassador Home - Supporters!**: Illustration of a knight in armor holding a sword and a banner.

On the right side, there is a 'Pages' sidebar with a tree view of the wiki's structure:

- Home
  - Archmage Home
  - Artisan Home
  - Adventurer Home
  - Scribe Home
  - Diplomat Home
  - Ambassador Home
- Archmage General
  - Mission statement
  - Code Models
  - Coding Guidelines
  - File system
  - JSDoc Schema
  - Testcase overview
  - Testing
  - Third party software and services
- Artisan General
  - Building A Level
  - Coding Guidelines for Artisans
  - Editing Thing Components
  - Important Artisan Concepts
  - Keyboard Shortcuts
  - Artisan How-To Index
- Adventurer General
- Scribe General
- Diplomat General

At the bottom, a welcome message reads: 'Hello CodeCombat contributors! Welcome to the wiki for CodeCombat. These documents are designed to give you everything you need to know, technical and non-technical, to dive into the project. If you see an opportunity to improve the docs, go ahead!'

**for PROF1 in Python**



**codewars.com**



## Особенности регистрации.

Подтверждения знания синтаксиса выбранного языка:

 The code does not execute properly. Try to figure out why.

```
def multiply(a, b):  
    a * b
```

Submit



❗ Correct this code, so that the greet function returns the expected value.

```
class Person:
    def __init__(self, name):
        self.name = name

    def greet(self, other_name):
        return "Hi {0}, my name is {1}".format(other_name, name)
```

```
Hi Mary, my name is Peter
```

```
>>>
```

```
*Python 2.7.6: 000.py - /home/vpikalova/000.py*
```

```
File Edit Format Run Options Windows Help
```

```
class Person:
    def __init__(self, name):
        self.name = name

    def greet(self, other_name):
        return "Hi {0}, my name is {1}".format(other_name, self.name)

ser = Person('Peter')
print ser.greet("Mary")
```



8 kyu

4



### Your Next Challenge...

Python

Rank Up

Train



7 kyu

### Find the anonymous function

Your input. First Parameter will be an array with an anonymous function somewhere in the lot, The second Parameter will be an array which you will filter using the anonymous function you find.

### Output

Your output. Output a filtered version of the second parameter using the function found in the first parameter.

[Fundamentals](#)[Functions](#)[Control Flow](#)[Basic Language Features](#)

### Allies

You are automatically given an allegiance with anyone who is in the same clan as you. You can also become allies with other warriors by following each other or inviting new warriors to join.

Position	User	Clan	Honor
1	vpikalova	IT Univer	4

Earn extra honor and gain new allies: invite code warriors!

[Learn more](#)

### Discourse [All](#) | [Questions](#) | [Issues](#) | [Suggestions](#)



Kamyk - commented on "Find Count of Most Frequent Item in an Array" python solution - 3 minutes ago

Like it, simple, clean and clever



sdkw - created an issue for "The elegance of the code" kata - 5 minutes ago

When running tests it said unknown error



hksong - created an issue for "Round to the next 5." kata - 14 minutes ago

Should include a negative example or test case to illustrate whether it rounds toward or away from 0.

Either the above or get rid of "Input may be any positive or negative integer (including 0)." from the description.























codewars

Achieve code mastery through challenge

# Рейтинговая система

## Training Manual

Master		<b>Kata</b> In our dojo, kata are real code challenges focused on improving skill and technique. Some train programming fundamentals, while others focus on complex problem solving. Each kata is crafted for and by the community.
		
		
		
Expert		<b>Kyu/Dan Ranks</b> Each kata on the site is set to a Kyu/Dan rank, based on its subject area and difficulty. The community collectively determines rank in the Beta Process.
		
		
		
Proficient		<b>Earning Ranks</b> You can advance through the ranks by completing kata at or above your rank - the harder the kata the faster you advance.
		
		
Competent		<b>Honor</b> Honor represents the level of respect a user has earned from the community, based on their skill and contributions. Honor is earned fastest through creating kata, crafting great solutions, and constructive comments.
		
Novice		
		
		
Beginner		







# Check iO



CheckiO

▶ START THE GAME



CHECKIO IS  
THE GAME  
FOR CODERS

O'REILLY

HOME

ELEMENTARY 5

YOU ARE HERE

ELECTRONIC STATION

MINE

INCINERATOR





All around you are piles of old books and ancient computing machines, each with their own mystery. Can you figure out how to find the Sum in a Triangle? Can you help Sofia by writing the rhythm for her song? Keep on reading because this place is a real page-turner!



### Fizz Buzz

A word game used to teach robots about division.

text

numbers

5

SOLVED • PUBLISHED • REVIEWED

Elementary



### Index Power

What is the power hidden within indexes?

structures

numbers

SOLVED • PUBLISHED • REVIEWED

Elementary



### Even the last

How to work with arrays indexes.

structures

numbers

SOLVED • PUBLISHED • REVIEWED

Elementary



### Monkey Typing

Put enough robots in a room with typewriters and they'll produce Shakespeare.

text

SOLVED • PUBLISHED • REVIEWED

Elementary



### Secret Message

SOLVED • PUBLISHED • REVIEWED





# Fizz Buzz

ELEMENTARY

5

3%

Russian

SOLVED • PUBLISHED • REVIEWED



"Fizz buzz" это игра со словами, с помощью которой мы будем учить наших роботов делению. Давайте обучим компьютер.

Вы должны написать функцию, которая принимает положительное целое число и возвращает:  
"Fizz Buzz", если число делится на 3 и 5;  
"Fizz", если число делится на 3;  
"Buzz", если число делится на 5;  
Число, как строку для остальных случаев.

**Входные данные:** Число, как целочисленное (int).

**Выходные данные:** Ответ, как строка (str).

**Примеры:**

```
1 checkio(15) == "Fizz Buzz"  
2 checkio(6) == "Fizz"  
3 checkio(5) == "Buzz"  
4 checkio(7) == "7"  
5
```

**Как это используется:** Здесь вы можете научиться как писать простейшую функцию и работать с if-else.

**Предусловия:**  $0 < \text{number} \leq 1000$

numbers

text

Vote<sup>(381)</sup>

Solve It

## Story

- ✓ Solve it
- Discuss (102)
- Timeline
- Solutions
- Random
- Python 3.3
- ➔ Get next task



<http://www.checkio.org/m/>

Users attempted:	30495
Users succeeded:	16219
Users published:	5085



```
#Your optional code here
#You can import some modules or create additional functions

def checkio(number):
    if number % 3 == 0 and number % 5 == 0:
        return "Fizz Buzz"
    elif number % 3 == 0:
        return "Fizz"
    elif number % 5 == 0:
        return "Buzz"

    return str(number)

#Some hints:
#Convert a number in the string with str(n)

#These "asserts" using only for self-checking and not necessary for auto-testing
if __name__ == '__main__':
    assert checkio(15) == "Fizz Buzz", "15 is divisible by 3 and 5"
    assert checkio(6) == "Fizz", "6 is divisible by 3"
    assert checkio(5) == "Buzz", "5 is divisible by 5"
    assert checkio(7) == "7", "7 is not divisible by 3 or 5"
```

Python console

on "Run Code" to view results or Ctrl + /  
on "Save" to save your code or Ctrl + S

Enter number:

Calculate Random

### Check results

"Fizz buzz" это игра со словами, с помощью которой мы будем учить наших роботов делению. Давайте обучим компьютер. Вы должны написать функцию, которая принимает положительное целое число и возвращает: "Fizz Buzz", если число делится на 3 и 5; "Fizz", если число делится на 3; "Buzz", если число делится на 5; Число, как строку для остальных случаев.  
**Входные данные:** Число, как целочисленное (int).  
**Выходные данные:** Ответ, как строка (str).  
**Предусловия:** 0 < number ≤ 1000

**vldyaremenko95.vy**  
I have no idea how to start solving this mission

**bryukh**  
To check various cases, use [if-else](#) statements.

```
if condition:
    do_something()
else if another_condition:
    do_something2()
else:
    do_something3()
```

**vldyaremenko95.vy**  
I need some help to proceed with the mission

**bryukh**  
You can check if a number is divisible with [the % operator](#). Just "if X % n == 0:" then X is divisible by n. That said, it's more pythonic to write "if not X % n:"

Someone else can help? I am gone half way through. Need help

# Empireofcode.com







EMPIRE  
of CODE



You can buy more builders to build or upgrade more than one building at the time.



Crystalite max 7 000

2 926

Adamantite max 2 000

Crystalite max 7 000

2 926

Adamantite max 2 000

0

Speed Boost

00:14:31

Energon

32

vpikalova

3 14

0

vpikalova

3 14

0

Builders

0/2

Builders

0/2

Build

7

Attack





# CodinGame

The image shows a screenshot of the CodinGame website. On the left is a dark sidebar with navigation links: HOME, GAMES, CLASH OF CODE, JOB STORE, CONTESTS, LEADERBOARDS, FORUM, BLOG, and ABOUT US. At the bottom of the sidebar is a red button for 'For Companies'. The main content area features a large, stylized illustration of a man on a motorcycle in a zombie-infested street. The text 'Online Coding Contest' is at the top, and 'CODE vs ZOMBIES' is written in large, bold, orange letters across the center. A yellow button labeled 'JOIN THE CONTEST' is positioned below the title. At the bottom of the main area are social media icons for Facebook, Twitter, Google+, and Friend Friends, along with a plus sign for more options.

**CodinGame**

Add nickname  
• 0  
• Chat

HOME  
GAMES  
CLASH OF CODE  
JOB STORE  
CONTESTS  
LEADERBOARDS  
FORUM  
BLOG  
ABOUT US

For Companies

Online Coding Contest

**CODE vs ZOMBIES**

JOIN THE CONTEST

f FACEBOOK t TWITTER g+ GOOGLE+ F FRIEND FRIENDS +



## TUTORIAL

100% Done



## Onboarding

Recent activity: Nov 24, 2015

★ 30/30

🏆 2/2

SOLVE IT

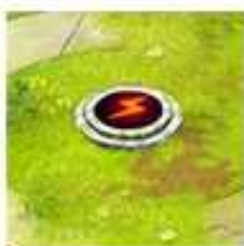
DETAILS

100% DONE

## EASY



5% Done



## Power of Thor

Recent activity: Nov 25, 2015

★ 25/50

🏆 1/2

SOLVE IT

DETAILS

50% DONE



## The Descent

No recent activity

★ 0/50

🏆 0/2

SOLVE IT

DETAILS

0% DONE

These companies are looking for coders like you!  
Here are some cool jobs you may like



To unlock this offer,  
you have to improve your  
current ranking

## Senior Ruby on Rails developer

Anywhere, Ukraine

Ruby

Javascript

Permanent position

DETAILS

enablon

Enablon



Score: 80

Enemies In zone: 7

Enemies killed: 6

Threat level

8/25

## The Goal

Your program must destroy the enemy ships by shooting the closest enemy on each turn.

## Code editor (Javascript)

```

1 /**
2  * CodinGame planet is being attacked by slimy insectoid aliens.
3  * <---
4  * Hint: To protect the planet, you can implement the pseudo-code provided in the statement.
5  **/
6
7
8 // game loop
9 while (true) {
10     var enemy1 = readline(); // name of enemy 1
11     var dist1 = parseInt(readline()); // distance to enemy 1
12     var enemy2 = readline(); // name of enemy 2
13     var dist2 = parseInt(readline()); // distance to enemy 2
14     if(dist1 < dist2){
15         print(enemy1);
16     } else {
17         print(enemy2);
18     }
19 }

```

## Console output

## Game information:

BeeBad has been targeted

Threats within range:

Spitfire 40m

ThunderStick 54m

Standard Output Stream:

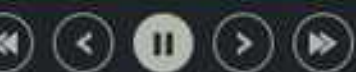
Spitfire

Game information:

## Test cases

PLAY ALL TESTS

03	Surrounded	▶	04	Bee's nest	▶
----	------------	---	----	------------	---



13/27



## The Goal

Your program must allow Thor to reach the light of power.

## Console output

Game information:

Thor's moving...

Thor position = (18,4). Light position = (31,4). Energy = 87

Standard Output Stream:

E

Game information:

Thor's moving...



14/27

15/27

## Code editor (Javascript)

```

1 //**
2 * Auto-generated code below aims at helping you parse
3 * the standard input according to the problem statement.
4 * ---
5 * Hint: You can use the debug stream to print initialTX and initialTY, if Thor seems not
6 **/
7
8 var inputs = readline().split(' ');
9 var lightX = parseInt(inputs[0]); // the X position of the light of power
10 var lightY = parseInt(inputs[1]); // the Y position of the light of power
11 var thorX = parseInt(inputs[2]); // Thor's starting X position
12 var thorY = parseInt(inputs[3]); // Thor's starting Y position
13
14 // game loop
15 while (true) {
16     var remainingTurns = parseInt(readline()); // The remaining amount of turns Thor can m
17     var direction = '';
18     if(thorX >= 0 && thorX < 40){
19         if(thorX > lightX){
20             direction = 'W';
21             printErr(thorX + " " + lightX);
22         } else if(thorX < lightX){
23             direction = 'E';
24         }
25     }
26 }
  
```

## Test cases

PLAY ALL TESTS





[pythonchallenge.com](http://pythonchallenge.com)



[About](#)[FAQ](#)[Forum](#)[Solutions](#)[Guest Book](#)

# PYTHON CHALLENGE

## Квест на Питоне

The first programming riddle on the net.

1 9 3 0 5 6 1 visitors have attempted solving the challenge since May 2005.

There are currently 3 3 levels.



[Click here to get challenged](#)

What people have said about us:

"These sorts of things are in my opinion the best way to learn a language.", [brberg at Media Cloisters](#)

"It's the best web site of the year so far.", [Andy Todd at halfcooked](#)

"Addictive way to learn the ins and outs of Python.. a must for all programmers!", [salimma at stumbleupon](#)

"This challenge is fantastic. Clever, addictive and really gets your mind working. I feel like I'm playing Myst.", [James Tauber after finishing level 22.](#)



0



Hint: try to change the URL address.

1



everybody thinks twice before solving this.

g fmnc wms bgblr rpylqjyrc gr zw fylb. rfyrc qfyr amknsrclpcq ypc dmp. bmgle gr gl zw fylb  
gq glcddgagclr ylb rfyrc qfyr rfgq rcvr gq qm jmle. sqgle qrpgle.kyicrpylq() gq  
pcamkkclbcb. lmu ynnjw ml rfc spj.



# GAME DESIGN

# Python. Codeskulptor.org

Coursera.org

**coursera**



## An Introduction to Interactive Programming in Python (Part 2)

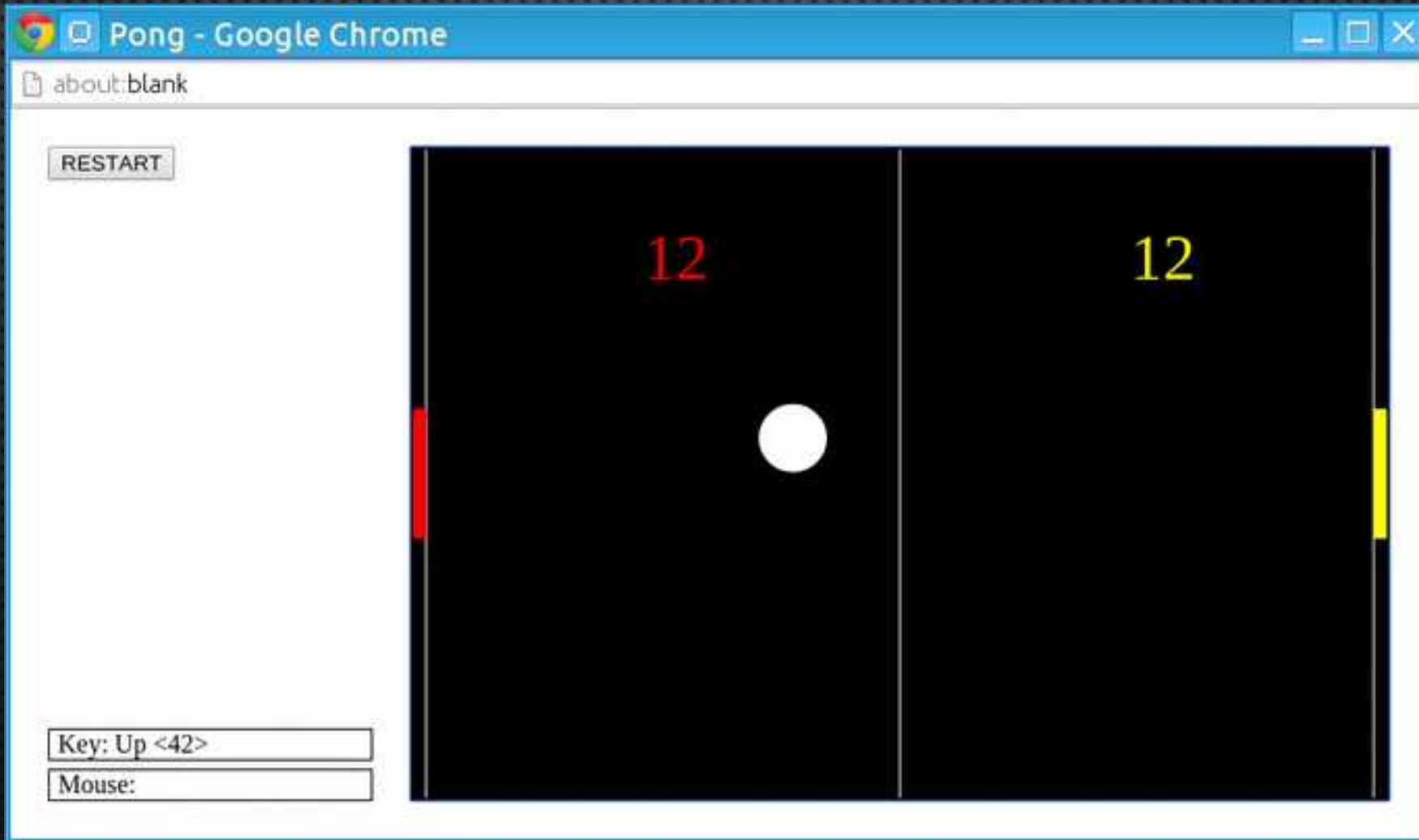
no Joe Warren, Scott Rixner, John Greiner, Stephen Wong





# Python. Codeskulptor.org

[http://www.codeskulptor.org/#user41\\_0irbhzHqvS\\_0.py](http://www.codeskulptor.org/#user41_0irbhzHqvS_0.py)



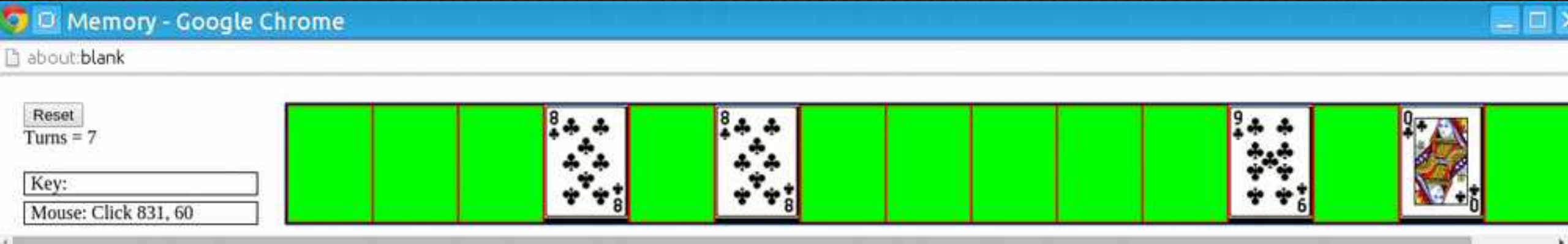
# Memory Cards. Codeskulptor.org

In line

[http://www.codeskulptor.org/#user43\\_NRIzn44wPC\\_9.py](http://www.codeskulptor.org/#user43_NRIzn44wPC_9.py)

In Table

[http://www.codeskulptor.org/#user43\\_NRIzn44wPC\\_13.py](http://www.codeskulptor.org/#user43_NRIzn44wPC_13.py)



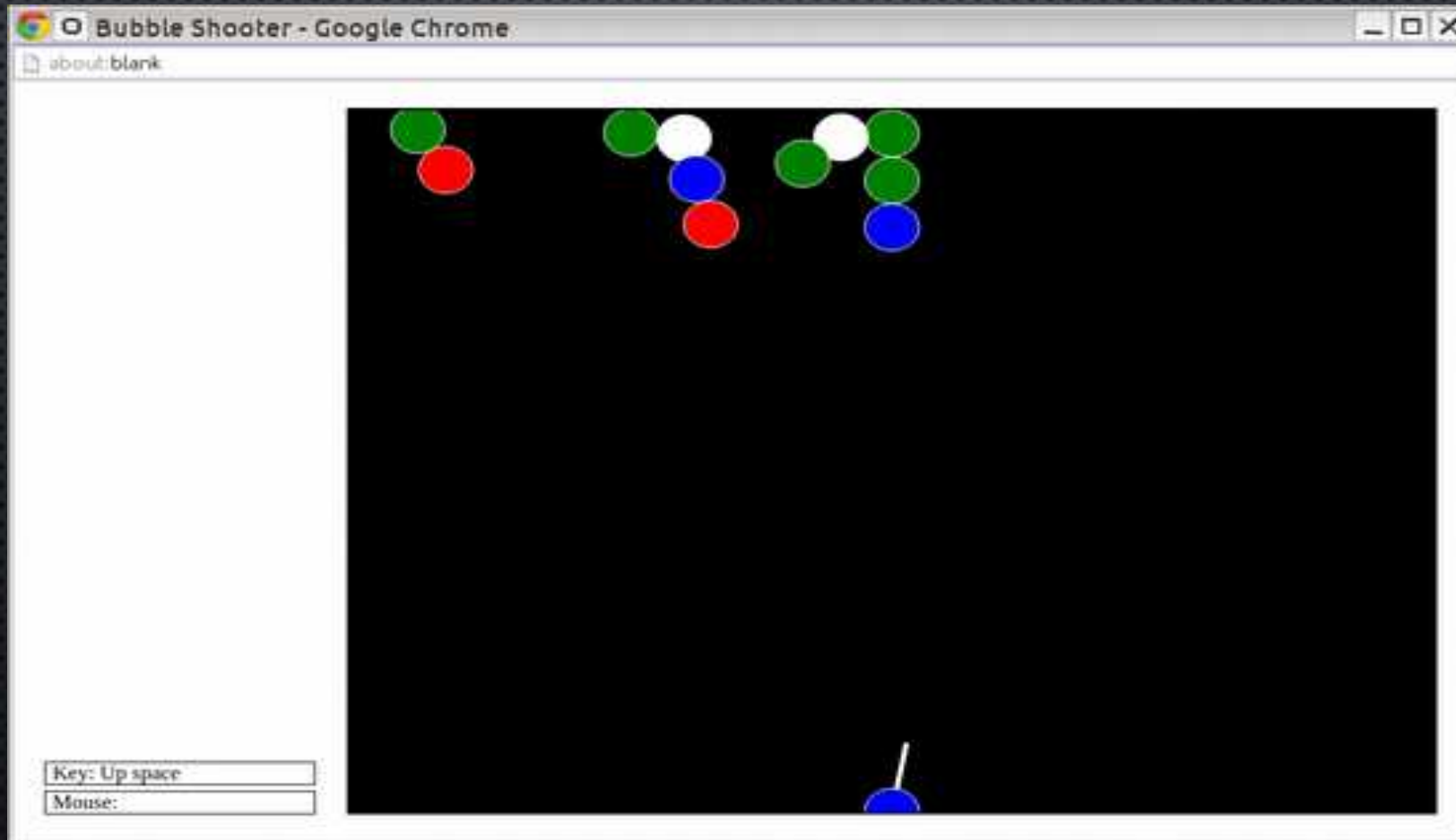


# Bubble Shooter



# Python. Codeskulptor.org

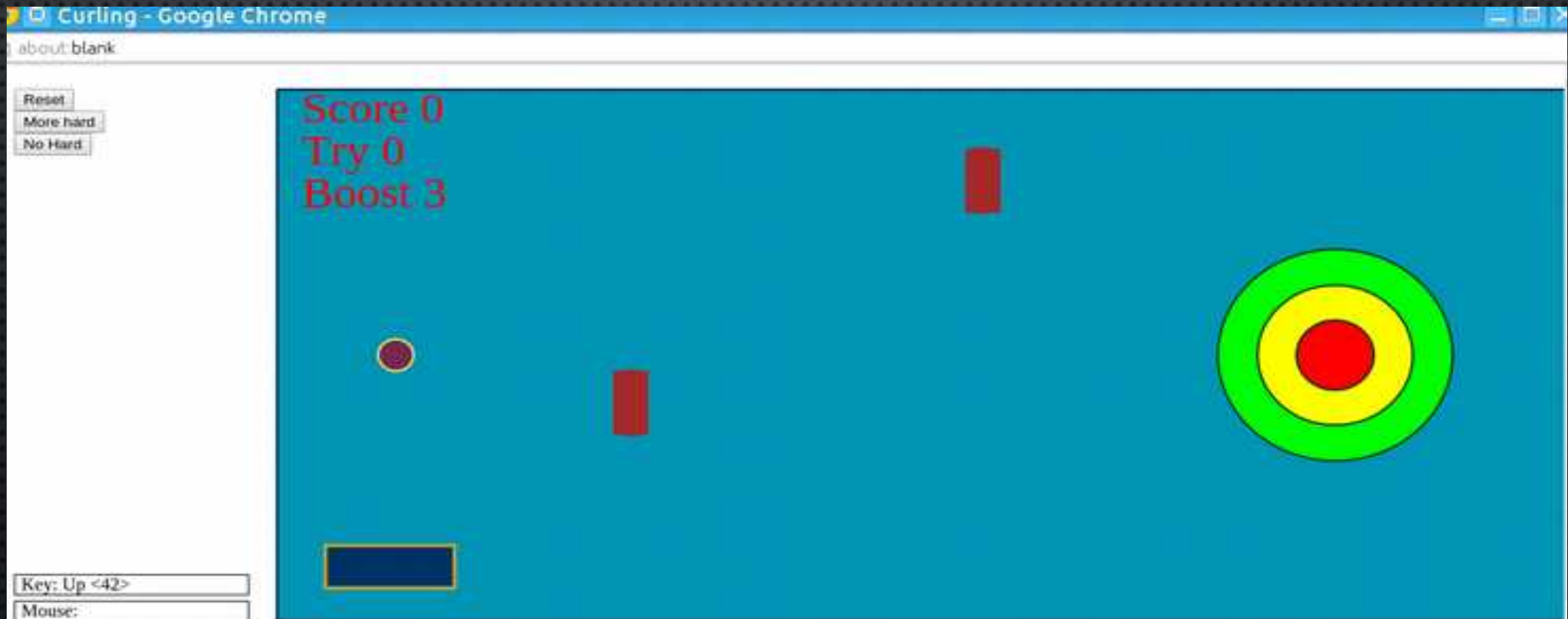
[http://www.codeskulptor.org/#exercises\\_sets\\_final\\_solution.py](http://www.codeskulptor.org/#exercises_sets_final_solution.py)





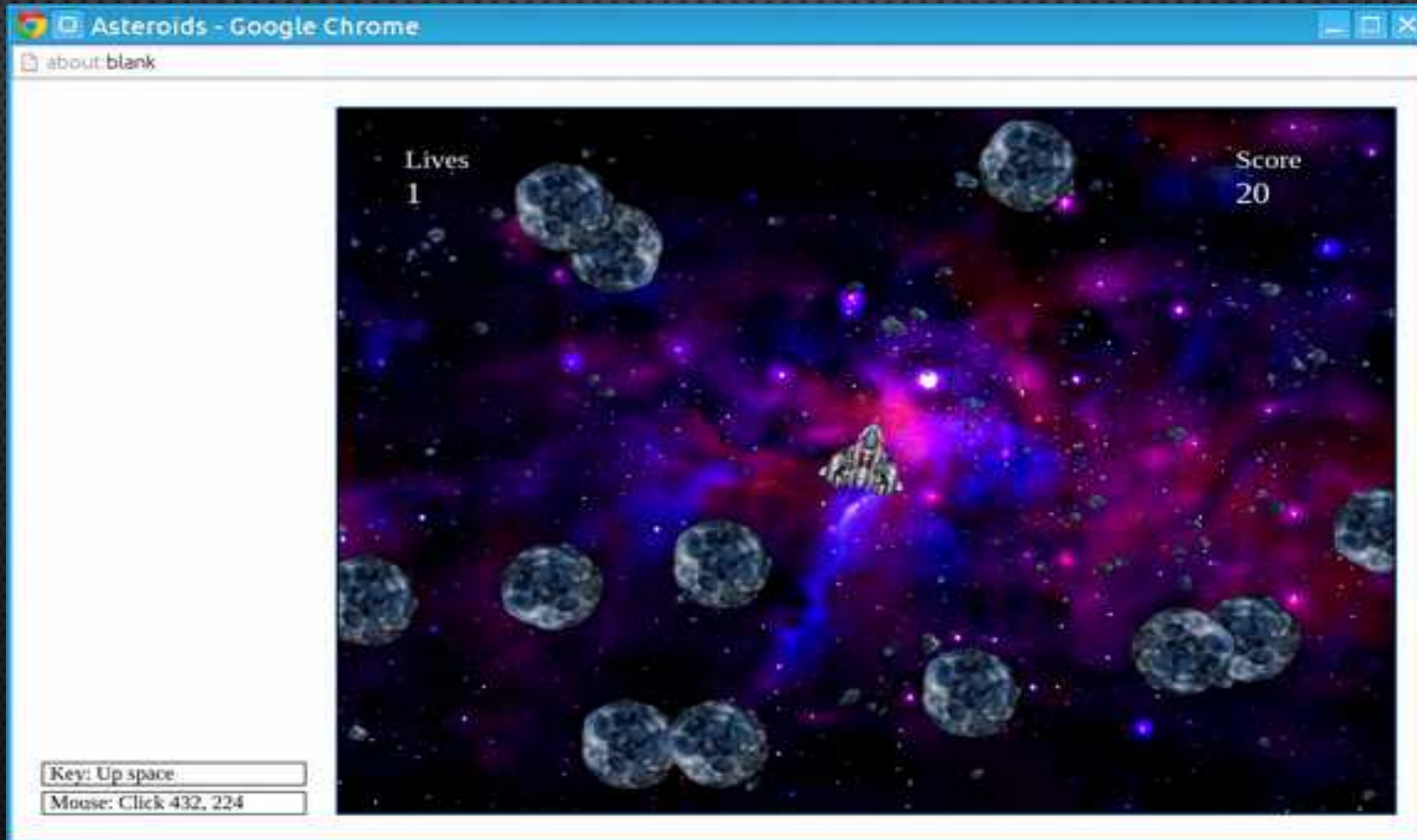
# Curling. Python. Codeskulptor.org

[http://www.codeskulptor.org/#save2\\_DwpGCPbaiK.py](http://www.codeskulptor.org/#save2_DwpGCPbaiK.py)



# Python. Codeskulptor.org

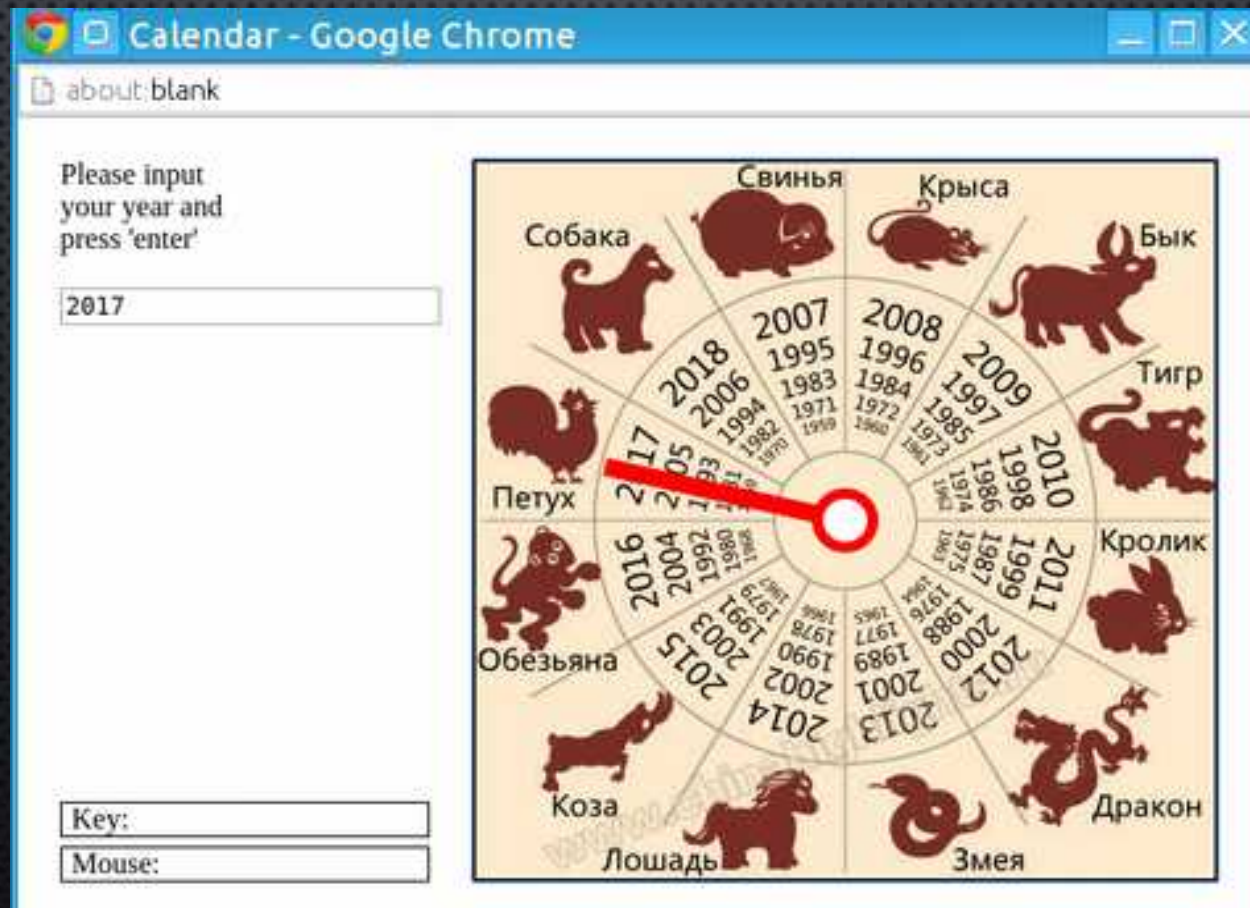
[http://www.codeskulptor.org/#user41\\_9Gi4euRkRj\\_0.py](http://www.codeskulptor.org/#user41_9Gi4euRkRj_0.py)





# Projects from Igor Vasilyev (9th grade):

[http://www.codeskulptor.org/#user42\\_tGsgKUKzm7\\_6.py](http://www.codeskulptor.org/#user42_tGsgKUKzm7_6.py)





# Projects from Kovalev Dmitry (10th grade):

[http://www.codeskulptor.org/#save2\\_DwpGCPbaiK.py](http://www.codeskulptor.org/#save2_DwpGCPbaiK.py)

[http://www.codeskulptor.org/#user43\\_ubN8SQAOSG\\_8.py](http://www.codeskulptor.org/#user43_ubN8SQAOSG_8.py)

[http://www.codeskulptor.org/#user42\\_fHKD7uJAN7\\_10.py](http://www.codeskulptor.org/#user42_fHKD7uJAN7_10.py)

[http://www.codeskulptor.org/#user42\\_Z1ZA3T5dxp\\_27.py](http://www.codeskulptor.org/#user42_Z1ZA3T5dxp_27.py)

[http://www.codeskulptor.org/#user42\\_Z1ZA3T5dxp\\_15.py](http://www.codeskulptor.org/#user42_Z1ZA3T5dxp_15.py)

[http://www.codeskulptor.org/#user42\\_ASnpzF68Pr\\_3.py](http://www.codeskulptor.org/#user42_ASnpzF68Pr_3.py)

[http://www.codeskulptor.org/#user42\\_RS1gSJsZGu\\_5.py](http://www.codeskulptor.org/#user42_RS1gSJsZGu_5.py)



# Games. GeoGebra Book

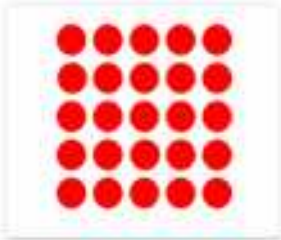
<https://www.geogebra.org/m/RrMgbg6T>

← GeoGebra

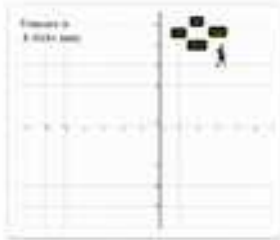
Games made in GeoGebra

- 2. Pirate Game
- 3. Guess My Rule (2013)
- 4. Angle Race
- 5. Log War
- 6. Dilabon Game
- 7. Rational Function Game
- 8. Dice Game Simulation
- 9. Boat Coordinate Game
- 10. Amazingly Simple PONG


1. Lights Out!



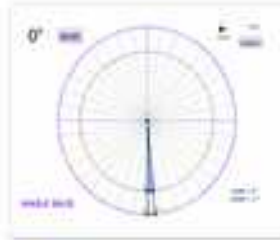
2. Pirate Game




3. Guess My Rule (2013)



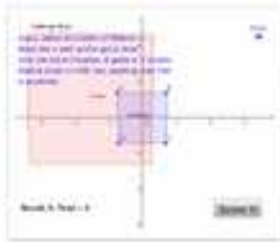
4. Angle Race




5. Log War




6. Dilabon Game




7. Rational Function Game




8. Dice Game Simulation



9. Boat Coordinate Game



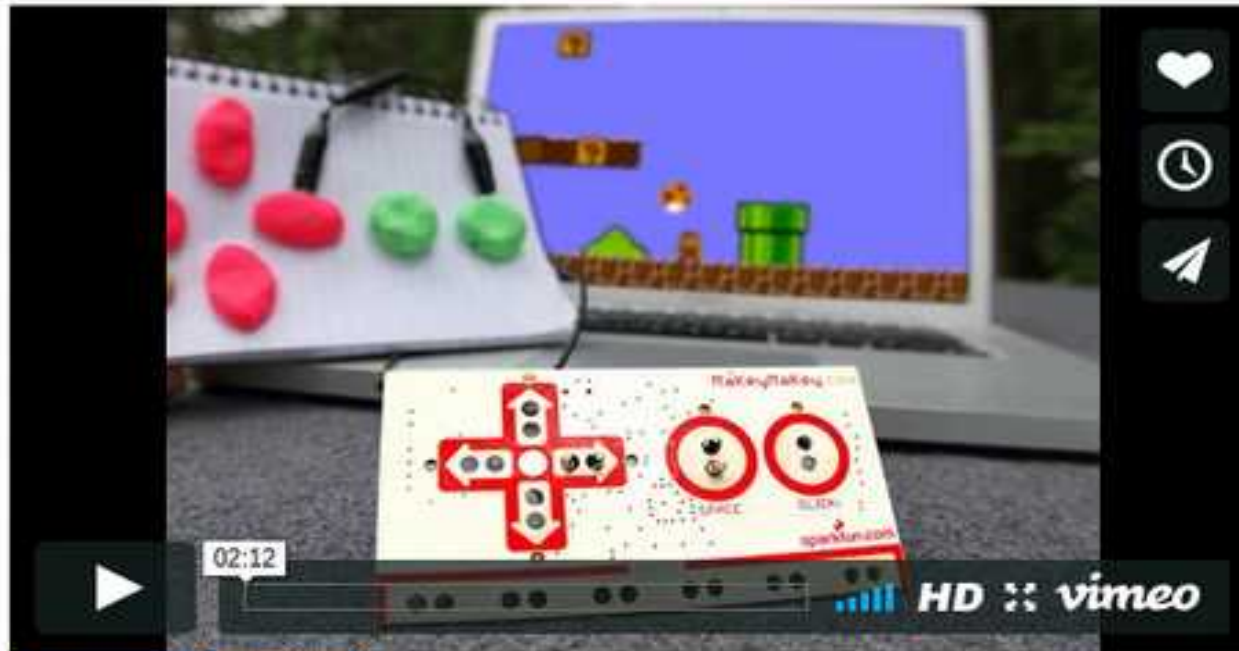
10. Amazingly Simple PONG



# Hands on group Activity. Makey Makey



## Makey Makey Classic





# Hands on group Activity. Makey Makey





# Designing and Constructing Games

- Complex mathematical reasoning
- Programming and computational skills
- Technical knowledge
- Gamer experience



# Mathematics Topics / Game Design Elements

- Vectors
- Geometric transformation
- Coordinate plane
- Random numbers
- ...
- Collision and Reflection
- Acceleration and friction
- Random walks
- Controlled movements
- ...

start with Game Design



move on to Science Simulation