



# GAME DESIGN BASED LEARNING OF PROGRAMMING FOR GIRLS

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# CODING 4 GIRLS Project



- Overcoming the gap between male and female,
- introducing more attractive learning methods.



- Innovative methodological learning framework for building programming skills.
- design thinking methodologies.



- European experts in the field of didactics of informatics, education, e-learning, coding, computational thinking and game-based learning,
- Bulgaria, Croatia (Sveučilište u Rijeci), Greece, Italy, Portugal, Turkey and Slovenia.



- Teachers from primary and secondary school,
- 10-16 years old students.



# Game (design) based learning

- Games are widely used in the classroom,
- many learning benefits
- studies:
  - students interested in using educational games,
  - games motivate, provide feedback, support skills, influence behavior and attitudes,
- C4G: students learn by creating games.

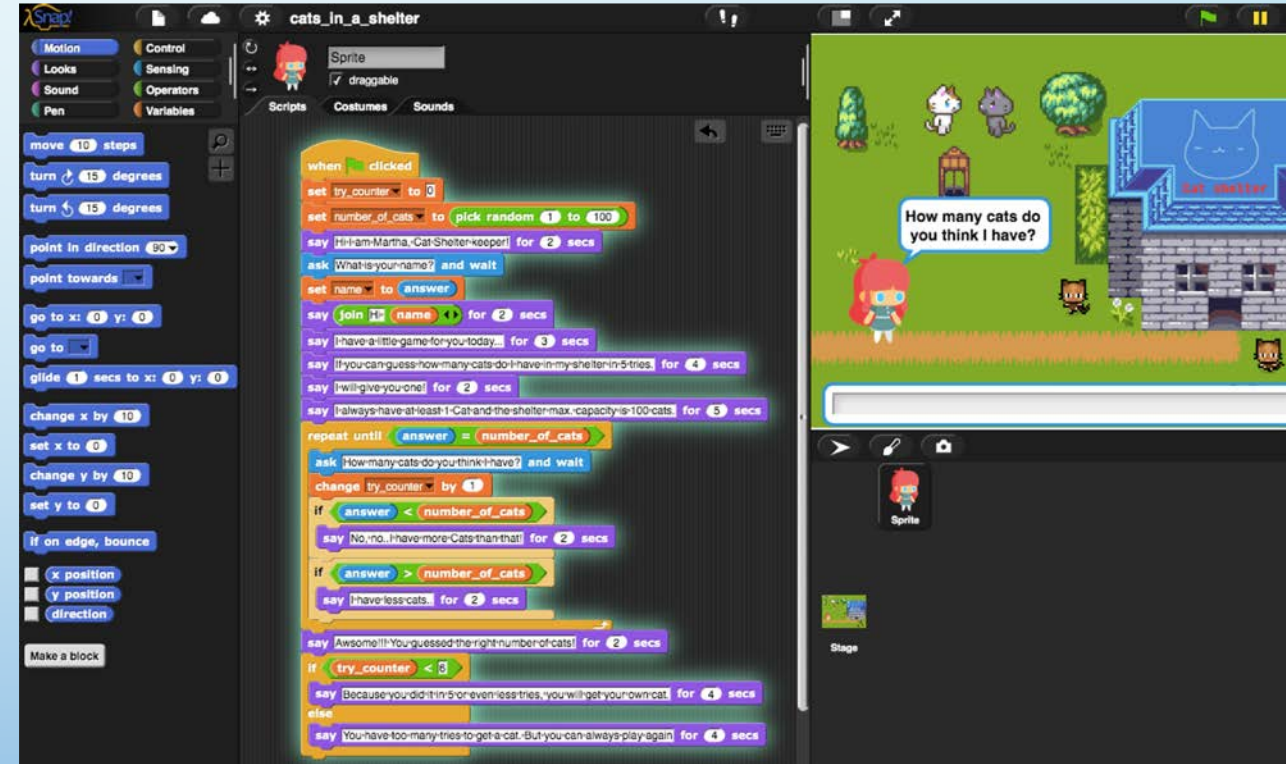


## Students will:

- Prepared for computer science careers,
- apply developed programming skills in larger contexts,
- build analytical, critical thinking,
- ICT solutions can improve quality of life,
- introduce solutions to real-world problems.

# Interesting games for girls

- Social games with rewards,
- role-playing games and new identities,
- storyline motivating element,
- challenges, fun, feedback,
- nature-related themes,
- main characters animals and fantasy,



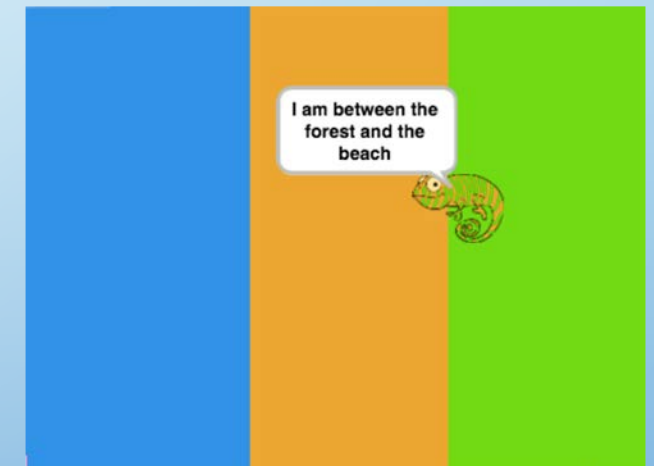


# Learning sheets for teaching programming

- Real world problems,
- “low entry-high ceiling” approach,
- partially completed solutions.

## Scenarij učenja 6 – Kameleonov ljetni odmor

<b>Naziv scenarija</b>	Kameleonov ljetni odmor
<b>Potrebno predznanje iz programiranja</b>	Dodavanje i uređivanje pozadine i lika Omogućiti da lik govori Korištenje naredbe <i>Ako ... onda ...</i> Kretanje objekta pomoću određenih tipki (npr. strelica)
<b>Ishodi učenja</b>	Koncepti programiranja: <ul style="list-style-type: none"><li>• kretanje objekta na temelju događaja</li><li>• očitavanje jedne ili više boja</li><li>• čitanje logičke vrijednosti u logičkim izrazima</li><li>• definiranje, razlikovanje, dinamičko provjeravanje i reagiranje na različita stanja igre</li></ul>

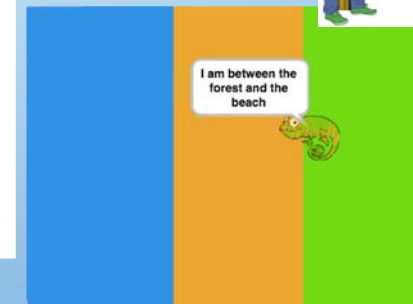
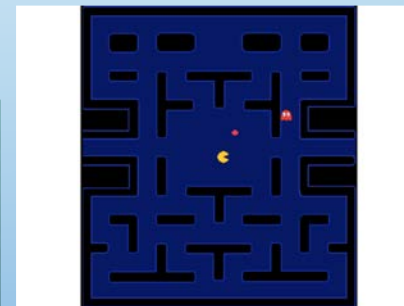
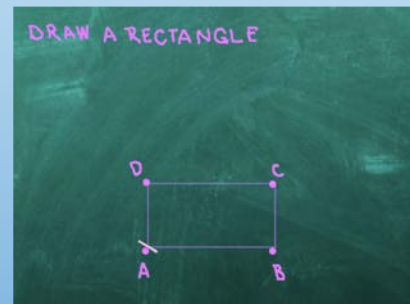
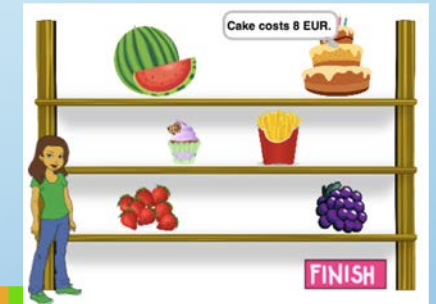


# Learning sheets for teaching programming

- Overall educational objective for each learning activity,
- concepts covered by the learning activity,
- specific learning objectives,
- expected learning outcomes,
- step-by-step use of the Coding4Girls game design-based learning approach,
- assessment methods for evaluating the developed knowledge,
- questions to stimulate discussion among learners,
- additional tasks for more advanced students.

# Learning sheets for teaching programming

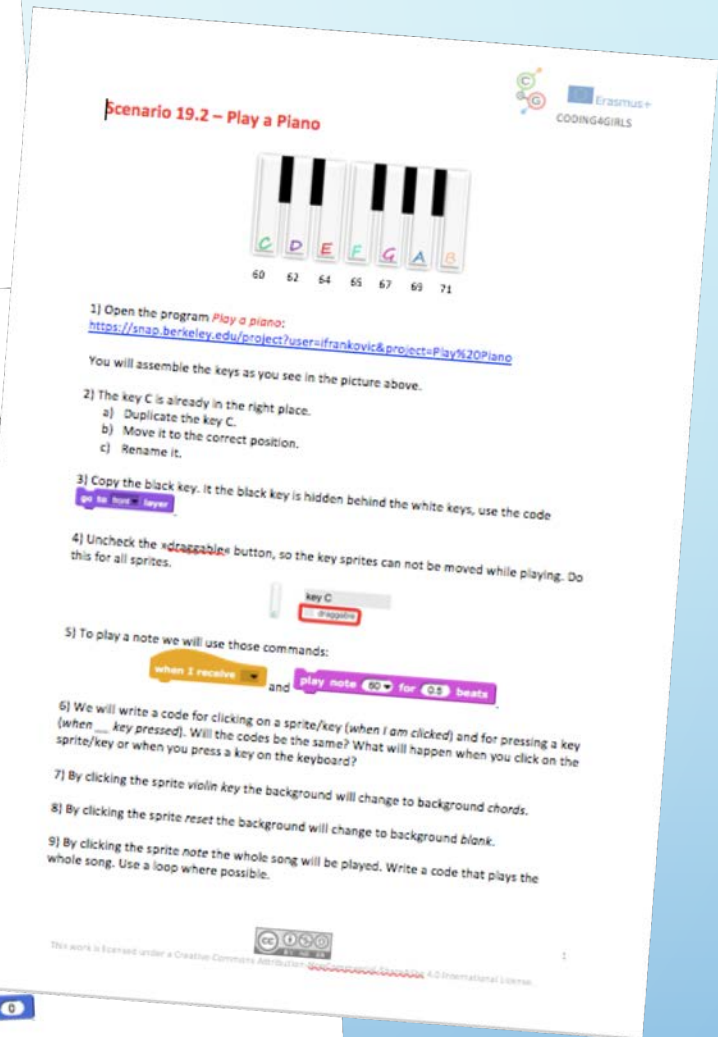
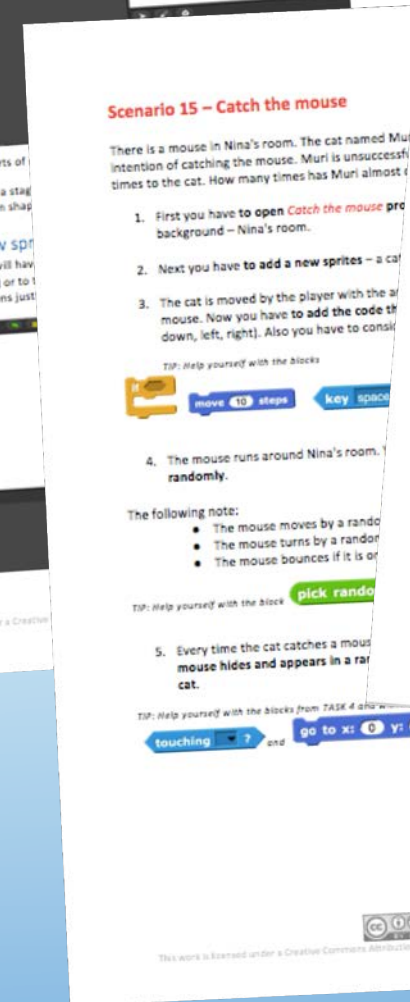
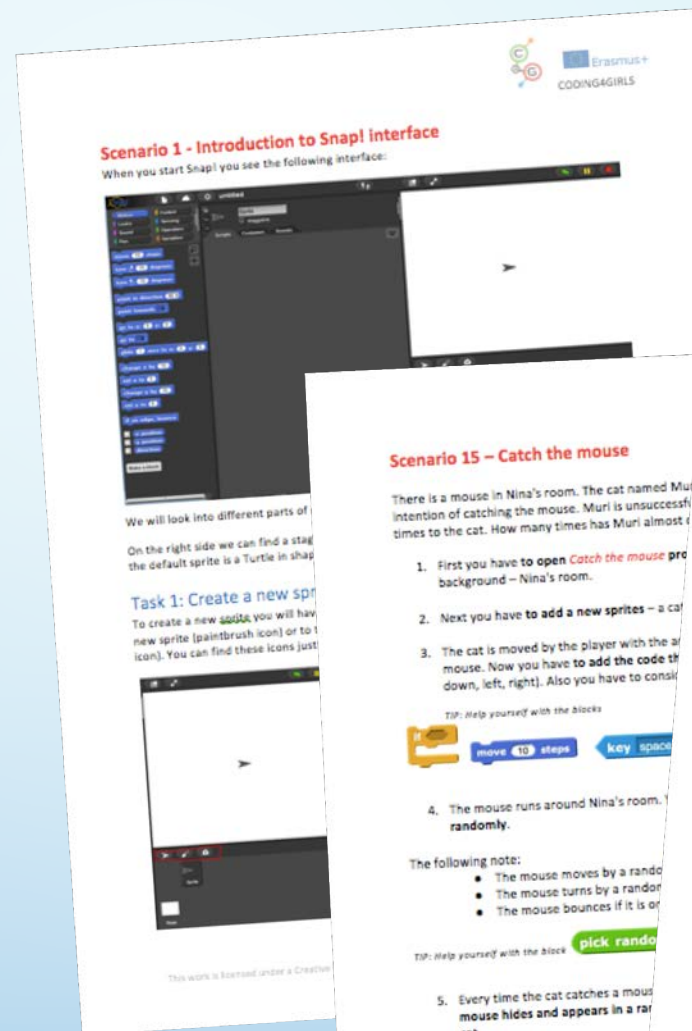
- More than 20 learning sheets,
- suggested order,
- generic functionality,
- user interaction process,
- Snap! activities,
- half-baked scenarios,
- basic and advanced activities.





# Instructions for students

- Instructions for individual work,
- in English, Italian and Slovenian.



# YouTube channel

- A collection of videos,
- video structure:
  - previous programming experience,
  - learning outcomes,
  - duration, methods, forms,
  - composition of the code,
  - remarks.

Erasmus+

Learning Scenario

Game

*16. Buying Food for a Picnic*

Project Coding4Girls

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Erasmus+

Learning Outcomes

General learning outcomes

- Variables
- Conditionals
- Operators

Specific learning outcomes oriented to algorithmic thinking

- Student uses variables for setting price for different sprites
- Student changes variables' value since the budget changes when the player buys food
- Student uses if statement to check the availability of money
- Student uses operators for joining text and the value of variables
- Student uses operators for comparing prices and budget
- Student uses operators (subtraction) to change the value of a variable

Buying Food for a Picnic

Erasmus+

Duration, Methods, Forms

Duration of Activities	45 minutes
Learning and Teaching Strategy and Methods	Active learning Game-design based learning Problem solving
Teaching Forms	Individual work / work in pairs

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Buying Food for a Picnic



Scan QR code or visit  
<https://www.youtube.com/channel/UC0DEdwkV9PsJ4Fb70MAJQrg>

# Conclusions

Testing (in progress):

- more than 900 students,
- more than 230 teachers,
  - questionnaire, observations, interview.

In Slovenia:

- winter school,
- course in primary school,
- Workshops.





THANK YOU 😊

Web page: [www.coding4girls.eu/](http://www.coding4girls.eu/)  
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