Getting started: your first steps in IT

Block 1. Scratch: creating game projects

Learning goals are to introduce children to the basics of modern digital technologies and programming using exciting interactive platforms and develop their creative and logical thinking, as well as problem-solving skills.

Course Syllabus:

Day one

Introduction to Scratch, block programming environment

− Basic concepts of programming and information technologies;
− Computer literacy: internet safety and file management;
− Scratch interface and basic tools.

Learning outcomes: got acquainted with the basic concepts of programming, learned about Internet safety rules.
Practical task: create an account and sign up the Scratch website.

Day two

The Scratch Paint Editor. Creating sprites for a project

− Computer literacy: working with images;
− How to search and download music files;
− New costumes and sprites creation;
− Introduction to Looks block commands.

Learning outcomes: learned how to add background music and create working buttons.
Practical task: add scripts for the main character and additional sprites to your game project.

Day three

Cartesian coordinate system in Scratch. Sprite movement

− Creating the game background;
− Basics of image processing;
− Introduction to Motion blocks;
− Variables and writing algorithms with variables.

Learning outcomes: added backgrounds to project and set up their switching, mastered the concept of "coordinate system".
Practical task: add variables to your project to track your pet's health.

Getting started: your first steps in IT

Block 1. Scratch: creating game projects

Learning goals are to introduce children to the basics of modern digital technologies and programming through exciting interactive platforms, developing their creative thinking, logical and problem-solving skills.

Course Syllabus:

Day four

Variables and conditions.
Working out the main character's states

− Variables, setting up algorithms with variables;
− Conditions and creating algorithms with conditions;
− Introduction to the concept of "Debugging";

Learning outcomes: set up the operation of variables, added conditions for changing the states of the main character and debugged the program.
Practical task: find and correct errors in the project, detail the game.

Day five

Complicating the project using conditions.
Character growth and development

− Conditions and refinement of algorithms with conditions;
− Creating a losing and winning situation;
− Create instructions for the player.

Learning outcomes: detailed our projects as much as possible, implemented the development of their main characters, and learned how to create game situations.
Practical task: development of the project.

Day six

Virtual Pet project presentation.
Summing up Scratch block results

− Development of the project. Preparation for project presentation;
− Consolidation of the studied basic concepts of programming and IT;
− Presentation of the final project.

Learning outcomes: repeated the basic concepts of programming, finalized Virtual Pet project and presented it.
Practical task: project presentation.

Getting started: your first steps in IT

Block 2. Minecraft: First steps in programming

Learning goals are to introduce children to the basics of modern digital technologies and programming through exciting interactive platforms, developing their creative thinking, logical and problem-solving skills.

Course Syllabus:

Day one — **Introduction to Minecraft Education and basic programming concepts**

− Introduction to Minecraft Education: features and opportunities for learning programming;
− Minecraft Edu interface, navigation and MakeCode platform;
− Writing a program to move Agent.

Learning outcomes: learned how to navigate Minecraft, mastered basic programming concepts, and wrote the first program in Minecraft MakeCode.
Practical task: write a program for Agent to pass the maze.

Day two — **Agent control**

− Learning the concepts of "algorithms" and "loops";
− Basics of block programming for agent control;
− Creating simple algorithms for Agent's movement control;
− Creating algorithms using loops with a counter.

Learning outcomes: learned how to manage Agent, place blocks, and simplify our code with loops to replace repetitions.
Practical task: create a program for an agent to perform tasks in a prepared world.

Day three — **Loops in programming**

− Working with loops in programs;
− Repeating loop with counter topic;
− Conditional loop.

Learning outcomes: learned how to create algorithms using two types of loops (counter loop and conditional loop) to optimize tasks.
Practical task: program an agent to perform repetitive tasks (laying a mine, building a ladder, and other tasks).

Day four — **Variables**

− The concept of "variables";
− Variables in programs;
− Dynamic code using variables.

Learning outcomes: learned how to use variables in our programs.
Practical assignment: write programs using variables (move counter, multiple entities creation, print text using blocks).

Getting started: your first steps in IT

Block 2. Minecraft: First steps in programming

Learning goals are to introduce children to the basics of modern digital technologies and programming through exciting interactive platforms, developing their creative thinking, logical and problem-solving skills.

Course Syllabus:

Day five — **Conditional operators and mathematical tasks in Minecraft**

− Conditional constructions and comparisons in programs;
− Dynamic code using conditional operators and comparisons;
− Solving math problems in Minecraft;
− Apply mathematical knowledge to solve problems in the game.

Learning outcomes: learned conditional operators and applied mathematical knowledge to solve problems in the game.
Practical task: create a calculator program, perform calculations.

Day six — **Basics of text programming**

− Introduction to text programming and programming languages;
− Technology for creating code in Minecraft;
− Create and debug simple code in Minecraft.

Learning outcomes: gained an understanding of programming languages, text coding scope.
Practical task: create a simple program in Python or JavaScript inside Minecraft (scripts for controlling agent movement and other tasks).

Day seven — **Developing your own project**

− Repetition of the basic concepts of programming;
− Choosing a project idea;
− Getting started on the project: planning and creating the first elements;
− Preparation for the presentation of projects.

Learning outcomes: chose an idea and started implementing individual project in Minecraft, discussed the presentation.
Practical task: project tasks, creating a prototype of the project.

Day eight — **Project presentation. Summing up Minecraft block results**

− Completion of projects;
− Project presentation, demonstration of the results;
− Getting feedback on projects;
− Summing up the results of the block, discussing the opportunities of learning programming with CODDY.

Learning outcomes: finalized Minecraft project and presented it.
Practical task: project presentation.

Getting started: your first steps in IT

Block 3. Artificial Intelligence and 3D modeling in game design

Learning goals are to introduce children to the basics of modern digital technologies and programming through exciting interactive platforms, developing their creative thinking, logical and problem-solving skills.

Course Syllabus:

Day one

Introduction to game design. Writing a concept document

− The entrance game. Interactive quiz;
− What is game design? Game development pipeline and game genres;
− Text generation. ChatGPT. Topic of conversation with AI;
− Ethics and safety of using AI-based services;
− Create a concept document with a story for the game;
− Working with Google documents.

Learning outcomes: got acquainted with the basic concepts in game development, learned about different game genres, and learned how to work with ChatGPT.
Practical task: write a concept document for the game.

Day two

Development of creative thinking. Generating images using AI

− Professions in game development;
− Game styles. Low-poly style;
− Familiarity with generative AI-based services;
− Generating images and selecting references for the game;
− Save your image collection to Google Drive.

Learning outcomes: learned about various professions in game development, learned how to work with AI to generate images, and collected concept art for the game in a Google Drive folder.
Practical task: generate and save images for the game.

Day three

Creating simple game models in Blender

− Introduction to the Blender 3D editor;
− Installation and configuration of the program. Overview of the interface;
− Navigation in the workspace and keyboard shortcuts;
− Creating and editing game objects;
− Creating and saving a character model;
− Modify and save the finished game character to a file.

Learning outcomes: learned how to navigate the Blender workspace, create and save game objects.
Practical task: creating and saving a character model.

CODDY

Getting started: your first steps in IT

Block 3. Artificial Intelligence and 3D modeling in game design

Learning goals are to introduce children to the basics of modern digital technologies and programming through exciting interactive platforms, developing their creative thinking, logical and problem-solving skills.

Course Syllabus:

Day four

Working on a game project. Creating game props in Blender

− Game environment;
− Props and assets;
− Modeling tools;
− Create three types of models for the game;
− Save to files .blend.

Learning outcomes: got acquainted with the concepts of "game environment", "props", " assets", and studied modeling tools.
Practical task: create props models (crate, barrel, targets) for the game.

Day five

Modeling a saloon building in Blender. Import of props and models from the Internet. Assembling a game scene

− Building modeling based on the example of a saloon: creating walls; porches, windows, doors, and signs;
− Creating a landscape;
− Import of props and models from the Internet;
− Assemble a game scene.

Learning outcomes: created a building for the game, a landscape, and put together a game scene.
Practical task: create a building model for the game, import landscape elements, and assemble a scene in Blender.

Day six

Export and import the project. Preparation of projects and their presentation. Game engines and Gamedev block summary

− Export from Blender. Import to Roblox;
− Preparation for the presentation;
− Game engines and CODDY courses − recommendations for further training and development in the field of game development;
− Project presentation. Lesson and Gamedev block results.

Learning outcomes: learned how to import and export models, got acquainted with various game engines, and presented final projects.
Practical task: project presentation.

Getting started: your first steps in IT

Block 4. Roblox: game creation and control

Learning goals are to introduce children to the basics of modern digital technologies and programming through exciting interactive platforms, developing their creative thinking, logical and problem-solving skills.

Course Syllabus:

Day one   **Programming in IT. Getting to know Roblox Studio**

− Introduction to Roblox Studio;
− Introduction to interface and navigation inside the program;
− Launching the game, character control;
− Publish and save the map;
− Interface of the Roblox website. Change the game settings via the site.

Learning outcomes: learned how to work with Roblox Studio, save and edit a project, and edit map settings.
Practical task: publish your game world.

Day two   **Creating simple models. Working on Parkour game**

− Creating simple 3D objects, working on models;
− Grouping objects;
− Beginning of Parkour project creation.

Learning outcomes: learned how to create and modify 3D objects.
Practical task: create a 3D house, creating three levels of Parkour game from simple to complex.

Day three   **Modeling complex 3D objects, working on your own map**

− Creating realistic 3D objects, including rooms;
− Using of all types light effects and adjusting them;
− Finishing working on Parkour game.

Learning outcomes: learned how to create realistic 3D rooms with realistic light sources. Made 2 more levels in your game.
Practical task: create a multi-storey building with the arrangement inside and realistic outside.

Day four   **Studying effects and working with landscape generation**

− Study the effects of fire, smoke, and particle emitters;
− Automatic world generation, sids, dimensions, and landscapes;
− Starting to develop your own game.

Learning outcomes: learned how to work with different types of effects, learned how to create a landscape, and came up with the idea of a new game to create.
Practical assignment: generate a world, develop an idea for your own new game.

Getting started: your first steps in IT

Block 4. Roblox: game creation and control

Learning goals are to introduce children to the basics of modern digital technologies and programming through exciting interactive platforms, developing their creative thinking, logical and problem-solving skills.

Course Syllabus:

Day five

Working with the landscape manually. Learning Lua variables

− Change the landscape manually;
− The concept of scripts, the beginning of creating simple scripts;
− Studying a variable using the example of a shopping cart;
− Variable programming;
− File paths in the variable;
− The print command.

Learning outcomes: learned what scripts are used for, how to change the landscape manually, and variables.
Practical task: change the generated landscape, add a waterfall.

Day six

Learning Lua loops. Working on your own game

− Repetition of working with variables in programming;
− Getting to know the loops;
− Infinite loop;
− For loop.

Learning outcomes: learned what loops are for and how they work, started creating our own new game, defined its style and genre, and made the main location.

Practical task: create day and night change using a loop, generate (configure) your map.

Day seven

Working with your own game. Working with joints (motors)

− We define the theme of a new game, which we will present at the end of the module;
− Creating locations;
− Joints. Creating a swing;
− Joints. Creating a carousel.

Learning outcomes: continued working on our game, learned how to work with joints.
Practical task: work on a new game, create a carousel (like in an amusement park).

Getting started: your first steps in IT

Block 4. Roblox: game creation and control

Learning goals are to introduce children to the basics of modern digital technologies and programming through exciting interactive platforms, developing their creative thinking, logical and problem-solving skills.

Course Syllabus:

Day eight

Working with your own game

− We continue to work on the previously made map, using the skills we learned;
− Adding decorations and effects to the game;
− Customizing the weather.

Learning outcomes: continued developing our game.
Practical task: work on your own game.

Day nine

Programming in lua. Functions and events. Updating the game

− What are functions in programming;
− How events work;
− How to activate the feature;
− Solving problems related to the use of functions and loops;
− Using functions in your game.

Learning outcomes: studied the use of functions in programs, learned how to activate them and interact with them. Applied new knowledge to your game.
Practical task: solve practical tasks, implement a function in the game (opening the door, changing the day and night by pressing the button, adding an item to the inventory).

Day ten

Completing the game creation. Project presentation

− Completion of work on the project;
− Testing and debugging the game;
− Publication of the project;
− Presentation of created game projects.

Learning outcomes: presented the game, published the created game in Roblox, and made a presentation of projects created during the course.
Practical task: debug a project, publish a game project, and present games created during the course.

Getting started: your first steps in IT

Block 5. Cybersecurity, project presentation and course results

Learning goals are to introduce children to the basics of modern digital technologies and programming through exciting interactive platforms, developing their creative thinking, logical and problem-solving skills.

Course Syllabus:

Day one

Fundamentals of cybersecurity. Basics of project presentation

− Cybersecurity for children − rules for safe work on the Internet;
− Discuss the specifics of working on presentations;
− Personal practice: working out the presentation;
− Speaking skills, development of public speaking skills.

Learning outcomes: learned the basic rules of cybersecurity,
selected projects for presentation at the final lesson,
and started preparing for project presentation.
Practical task: prepare a speech and a presentation
of your part of the project.

Day two

Presentation of the final project

− Consolidation of the studied basic concepts of programming and IT;
− Personal practice: completion of the presentation;
− Checking the correctness of the slides, the final rehearsal of the performance
  with the presentation of the project;
− Presentation of the final project;
− Summing up the course: recommendations for further training
and development in the field of information technology, game development,
programming and digital creativity.

Learning outcomes: presented the results of the course and decided
what we like to do in the future.
Practical task: participation in project presentations.