“Nazarbayev Intellectual School” of
Physics and Mathematics Aktobe

Approved:
Director of the school
Buksukbayev K.S.
_____
«____» _____ 2023

Agreed:
Director of the educational Department
Kuzhakova S.Zh
_____
«____» _____2023

Examined:
at the meeting of the Department of
“Computer Science and Art”
Protocol № from « »september 2023
Head of the Department
Gaysagalieva B.M. _____
«____» _____2023

Calendar thematic lesson planning for the 2023-2024 academic year

Subject: **Programming**
Grade: **11**
Language of instruction: **English**

In the study of computer science in grade 11 is given 72 hours
Hours per week: 2

№ of lesson	Topic	Learning objectives
I quarter(18 hours)		
Unit 11.1A: Basic structures of the Python programming language		
1-2	Introduction to the Python programming language. Organizing data output	11.1.1.1 organize data output 11.1.1.2 use the escape sequences with data output
3-4	Data types. Data input	11.1.1.3 distinguish between data types in Python 11.1.1.4 convert data types of variables 11.1.1.5 organize keyboard inputs 11.1.1.6 use the simplest arithmetic operations when solving problems 11.4.3.2 solve applied problems from various subject areas
5-6	Branching algorithms	11.1.1.7 apply logic operations to Boolean variables 11.1.1.8 use logical operations AND, OR, NOT in the branching algorithm 11.1.1.9 implement the branching algorithm according to the flowchart 11.4.3.2 solve applied problems from various subject areas
7-8	While loop	11.1.2.1 write code using a While loop 11.1.2.2 implement a loop algorithm according to a flowchart 11.1.2.3 trace program code 11.4.3.2 solve applied problems from various subject areas
9-10	For loop	11.1.2.4 write program code using a For loop 11.1.2.5 define a range of values for a loop 11.1.2.6 debug a program 11.4.3.2 solve applied problems from various subject areas
11-12	Nested loops	11.1.2.7 use nested loops when solving problems 11.1.2.6 debug a program 11.4.3.2 solve applied problems from various subject areas
13	Summative assessment	
II quarter(14 h)		
Unit 11.2A: Data Structures		

14-15	Sets	11.2.1.1 create sets 11.2.1.2 use operations of adding, deleting, counting the number of elements 11.2.1.3 apply operations to sets: union, intersection, subtraction, symmetric difference 11.2.1.4 compare sets 11.4.3.2 solve applied problems from various subject areas
16-17	Processing of string data	11.2.2.3 apply functions and string processing methods 11.2.2.1 perform access to the elements of strings, lists, tuples 11.2.2.2 use slicers to process the string 11.2.3.6 determine the difference between different data structures
18-19	Lists	11.2.3.1 create a list 11.2.3.2 organize the output of a string using the split() and join() methods 11.2.2.1 perform access to the elements of strings, lists, tuples 11.2.3.3 apply functions and methods of processing lists 11.4.3.2 solve applied problems from various subject areas 11.2.3.6 determine the difference between different data structures
20-21	Tuples	11.2.4.1 create a tuple 11.2.2.1 perform access to the elements of strings, lists, tuples 11.2.4.2 convert from one data structure to another 11.4.3.2 solve applied problems of various subject areas
22	Summative Assessment	
III quarter(22 h)		
Unit 11.3A: Data structures (continuation)		
23-24	List and string methods.	11.2.2.3 apply functions and string processing methods 11.2.3.3 apply functions and string processing methods 11.4.3.2 solve applied problems of various subject areas.

25-26	Nested lists	11.2.3.4 create nested lists 11.2.3.5 enter elements of nested lists from the keyboard 11.4.3.2 solve applied problems of various subject areas
27-28	Dictionaries	11.2.5.1 create a dictionary 11.2.5.2 search for data in a dictionary for a given key 11.2.3.6 determine the difference between different data structures 11.4.3.2 solve applied problems of various subject areas
Unit 11.3B: Functions		
29-30	User-defined functions.	11.3.1.1 write code in a programming language using functions 11.3.1.2 assign function parameters 11.3.1.3 define the scope of variables 11.4.3.2 solve applied problems of various subject areas
31-32	Lambda functions	11.3.2.1 write code in a programming language using lambda functions 11.3.2.2 determine the result of a lambda function 11.4.3.2 solve applied problems of various subject areas
33	Summative assessment	
IV quarter(18 h)		
Unit 11.4A: Object Oriented Programming (OOP)		
34-35	Classes	11.4.1.1 create classes and instances of classes 11.4.1.2 develop methods for the class 11.4.1.3 use special method __init__ to set default properties 11.4.1.4 create a class hierarchy 11.4.1.5 define class and instance identifiers in the proposed code snippet
36-37	Polymorphism and inheritance.	11.4.2.1 explain the concept of polymorphism with examples

		11.4.2.2 explain the concept of inheritance with examples
38-39	Solution of applied problems.	11.4.3.1 decompose an applied task 11.4.3.2 solve applied problems of various subject areas
40	Summative assessment	