

КИЇВСЬКИЙ НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ ІМЕНІ
ТАРАСА ШЕВЧЕНКА
ФАКУЛЬТЕТ КОМП'ЮТЕРНИХ НАУК ТА КІБЕРНЕТИКИ

Звіт до лабораторної роботи №1.2
на тему
«Списки»

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Вступ

Модуль 1.2
Розділ 1. Списки
Варіант 52

Залишити у списку елементи у позиціях, що відповідають простим числам.

Код програми

```
:- dynamic isNotDivisible/2.  
:- dynamic isPrime/1.  
  
isDivisible(X, Y) :-  
    0 is X mod Y,!.  
  
isPrime(2) :- true,!.  
isPrime(X) :- X < 2,!,false.  
isPrime(X) :-  
    Limit is floor(sqrt(X)),  
    \+ (between(2, Limit, Y), X \= Y, isDivisible(X, Y)).  
  
keepPrimes(Array, Primes) :-  
    keepPrimes(Array, 0, Primes).  
  
keepPrimes([], _, []).  
keepPrimes([H|T], Index, Primes) :-  
    isPrime(Index),  
    NextIndex is Index + 1,  
    keepPrimes(T, NextIndex, Primes1),  
    Primes = [H|Primes1].  
keepPrimes([_|T], Index, Primes) :-  
    NextIndex is Index + 1,  
    keepPrimes(T, NextIndex, Primes).
```

run :-

```
Array=[0,1],  
write('input: '),  
writeln(Array),  
keepPrimes(Array, Primes),  
write('outcome: '), write(Primes).
```

Тести

Тест 1

Вхід: [0,1]

Вихід []

Тест 2

Вхід: [0,1,2,3,4,5,6,7,8,9,10]

Вихід: [2,3,5,7]

Тест 3

Вхід: [0, 1, 11, 12, 4, 13, 6, 14, 8, 9, 10]

Вихід: [11,12,13,14]

Тест 4

Вхід: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100]

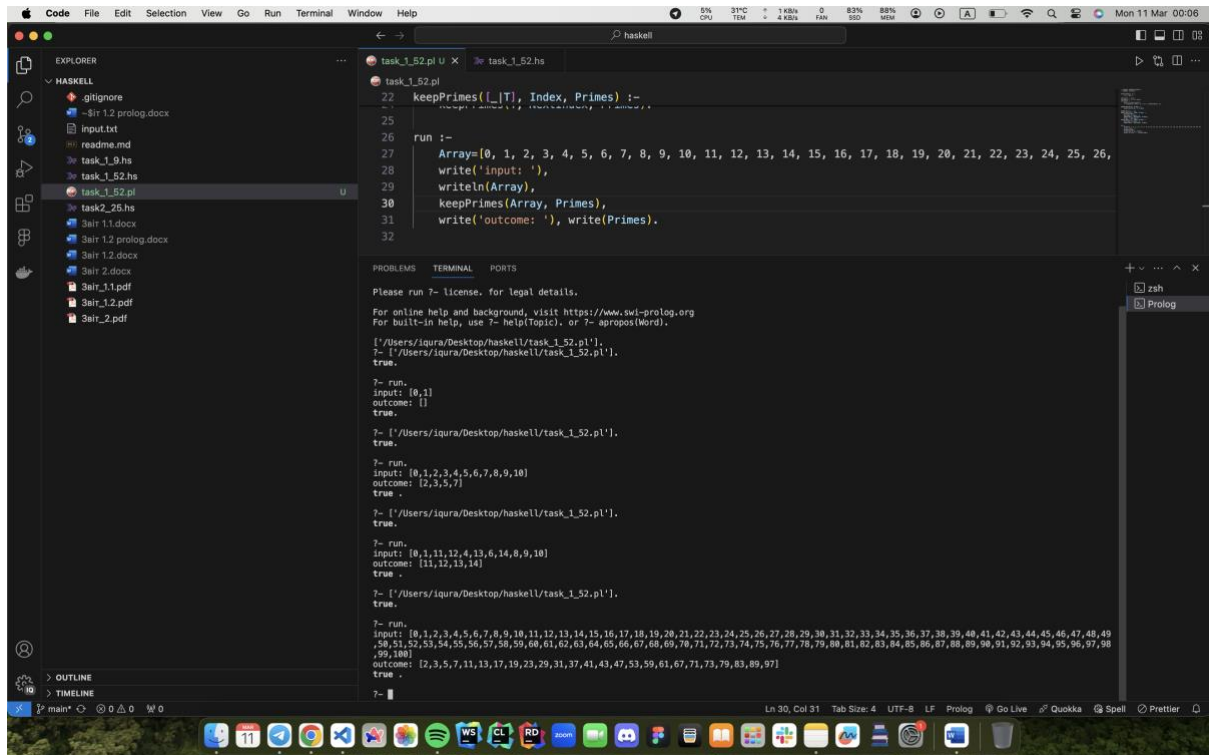
Вихід: [2,3,5,7,11,13,17,19,23,29,31,37,41,43,47,53,59,61,67,71,73,79,83,89,97]

	2	3	X	5	X	7	X	9	10
11	X	13	X	15	X	17	X	19	20
21	X	23	X	25	X	27	X	29	30
31	X	33	X	35	X	37	X	39	40
41	X	43	X	45	X	47	X	49	50
51	X	53	X	55	X	57	X	59	60
61	X	63	X	65	X	67	X	69	70
71	X	73	X	75	X	77	X	79	80
81	X	83	X	85	X	87	X	89	90
91	X	93	X	95	X	97	X	99	100
101	X	103	X	105	X	107	X	109	110
111	X	113	X	115	X	117	X	119	120

Prime numbers

2	3	5	7
11	13	17	19
23	29	31	37
41	43	47	53
59	61	67	71
73	79	83	89
97	101	103	107
109	113		

Результати тестів



The screenshot shows a VS Code editor window with a Haskell project. The Explorer panel on the left shows a file tree with files like `task_1_52.pl` and `task_1_52.hs`. The main editor displays the `task_1_52.pl` file, which contains a `keepPrimes` function and a `run` function. The `run` function takes an array of numbers and prints the first prime and the list of primes. The terminal panel at the bottom shows the output of running the program for different inputs.

```
task_1_52.pl
22 keepPrimes([_|T], Index, Primes) :-
23     keepPrimes(T, Index, Primes).
24
25
26 run :-
27     Array=[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26,
28     write('input: '),
29     writeln(Array),
30     keepPrimes(Array, Primes),
31     write('outcome: '), write(Primes).
32
```

PROBLEMS TERMINAL PORTS

Please run 7~ license. for legal details.

For online help and background, visit <https://www.swi-prolog.org>

For built-in help, use 7~ help(Topic), or 7~ apropos(Word).

['/Users/iquira/Desktop/haskell/task_1_52.pl'].
7~ ['/Users/iquira/Desktop/haskell/task_1_52.pl'].
true.

7~ run.
input: [0,1]
outcome: []
true.

7~ ['/Users/iquira/Desktop/haskell/task_1_52.pl'].
true.

7~ run.
input: [0,1,2,3,4,5,6,7,8,9,10]
outcome: [2,3,5,7]
true .

7~ ['/Users/iquira/Desktop/haskell/task_1_52.pl'].
true.

7~ run.
input: [0,1,11,12,4,13,6,14,8,9,10]
outcome: [11,12,13,14]
true .

7~ ['/Users/iquira/Desktop/haskell/task_1_52.pl'].
true.

7~ run.
input: [0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100]
outcome: [2,3,5,7,11,13,17,19,23,29,31,37,41,43,47,53,59,61,67,71,73,79,83,89,97]
true

7~