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Problem statement

A math teacher needs a program in order to help students to test different properties of numbers. The program manages a list of numbers and also allows students to repeatedly execute different functionalities.

Numerical lists – Feature list

F1. Add numbers into the list.
F1.1. Add a number at the end of the list.
F1.2. Insert a number at a specific position.
F2. Modify elements from the list.
F2.1. Remove the element at the desired position.
F2.2. Remove the element from a desired interval.
F2.3. Replace all the occurrences of a sublist with a different sublist.
F3. Write the numbers having different properties.
F3.1. Write the prime numbers between two desired positions.
F3.2. Write the odd numbers between two desired positions.
F4. Obtain different characteristics of sublists.
F4.1. Write the sum numbers between an interval.
F4.2. Write the greatest common divisor of elements between an interval.
F4.3. Write the greater element of the sublist from an interval.
F5. Filter.
F5.1. Filter the list to retain only the prime numbers.
F5.2. Filter the list to retain only the negative numbers.
F6. Undo
F6.1. Undo the last operation that has modified the list.

Iteration plan

Iteration	Planned Features
I1.	F1. Add numbers into the list.
	F2. Modify elements from the list.
	F3. Write the numbers having different properties.
I2.	F4. Obtain different characteristics of sublists.
	F5. Filter.
I3.	F6. Undo.

Iteration 1

Running scenario

	User	Program	Description
1		mainMenu()	Shows the main menu.
2	1	ui1()	Shows feauture's 1 sub-menu.
3	1		Goes to the first sub-feauture.
4	5		Inputs the desire number.
5		addNumber(l,num)	Add the inputed number to the list.
6	x		Inputs the desire

			number.
7		ValueError	Error, x is a non numerical value.
8		ui()	Goes back to the main menu.
9	3	print(l)	Prints the list.
10	x	mainMenu()	Goes back to the main menu.
11	1	ui1()	Shows feature's 1 sub-menu.
12	1		Goes to the first sub-feature.
13	x		Inputs the desire number.
14		ValueError	Error, x is a non numerical value.
15		ui1()	Goes back to the sub-menu.
16	2		Goes to the feauture 1 second sub-feature.
17	2		Inputs the desired number.
18	0		Inputs the desired position.
19		insertNumber(l,pos,num)	Inserts the number at the

			inputed position.
20	x		Inputs the desired number.
21		ValueError	Error, x is a non numerical value.
22		ui1()	Goes back to the sub-menu.
23	3	print(l)	Prints the list.
24	x	mainMenu()	Goes back to the main menu.
25	1	ui1()	Shows feature's 1 sub-menu.
26	2		Goes to the feature1 second sub-featur.
27	2		Inputs the desired number.
28	x		Inputs the desired position.
29		ValueError	Error, x is a non numerical value.
30		ui1()	Shows feature's 1 sub-menu.
31	4	mainMenu()	Goes back to the main menu.
32	2	ui2()	Shows feature's 2 sub-menu.
33	1		Goes to the

			feature'2 first sub-feature.
34	0		Inputs the desire position.
35		removeNumber(l,pos)	Removes the elements from the inputed position.
36	3		Inputs the desire position.
37	y	IndexError	Inputs an error message.
38		ui1()	Goes back to the first sub-menu.
39	1		Goes to the first sub-feature.
40	8		Inputs the desired number.
41	10		Inputs the desired number.
42	x		Inputs the desired number.
43		ValueError	Error, x is a non numerical value.
44		ui1()	Goes back to the first sub-menu.
45	4	mainMenu()	Shows the main menu.

46	2	ui2()	Goes to the feature2 sub-menu.
47	1		Goes to the feature2 first sub-feature.
48	3		Inputs the desire position.
49		removeNumber(l,pos)	Removes the number from the inputed position.
50			Inputs the desire position.
51	10	IndexError	Inputs an error message.
52	n	ui2()	Goes back to the sub-menu.
53	2		Goes to the feature2 second sub-feature.
54	0		Inputs the first number of the interval.
55	2		Inputs the second number of the interval.
56		removeInterval(l,num1,num2)	Removes the numbers from

			num1 to num2.
57	3		Inputs the first number of the interval.
58		IndexError	Inputs an error message.
59	y	ui1()	Goes back to the first sub-menu.
60	1		Goes to the first sub-feature.
61	1		Inputs the desired number.
62		addNumber(l,num)	Adds number num to the list.
63	2		Inputs the desired number.
64		addNumber(l,num)	Adds number num to the list.
65	3		Inputs the desired number.
66		addNumber(l,num)	Adds number num to the list.
67	4		Inputs the desired number.
68		addNumber(l,num)	Adds number num to the list.
69	x		Inputs the desired number.

70		ValueError	Error, x is a non numerical value.
71		ui1()	Goes back to the sub-menu.
72	4	mainMenu()	Goes back to the main menu.
73	2	ui2()	Goes to the second sub-menu
74	3		Goes to feature2 third sub-feature.
75	1	target.append(num1)	Inputs the numbers of the target.
76	2	target.append(num1)	Inputs the numbers of the target.
77	x		Inputs the numbers of the target.
78		ValueError	Error, x is a non numerical value.
79		break	Breaks the loop.
80	10	replacement.append(num2)	Inputs the numbers of the replacement.
81	11	replacement.append(num2)	Inputs the numbers of the

			replacement.
82	x		Inputs the numbers of the replacement.
83		ValueError	Error, x is a non numerical value.
84		break	Breaks the loop.
85		replaceList(l,target,replacement)	Replace target with replacement.
86		ui2()	Goes to the sub-menu.
87	4	mainMenu()	Goes back to the main menu.
88	3	ui3()	Goes to the third feature sub-menu.
89	1		Goes to the third feature first sub-feature.
90	10		Inputs the first number of the interval.
91	4		Inputs the last number of the interval.
92		isPrime(l,num1,num2)	Returns the primes numbers

			from the desired sublist.
93		ui3()	Goes back to the sub-menu.
94	2		Goes to the feature3 second sub-feature
95	20		Inputs the first number of the interval.
96		IndexError	Inputs an error message.
97	y	ui1()	Goes back to the first sub-menu.
98	1		Goes to the first sub-feature.
99	4		Inputs the desired number.
100		addNumber(l,num)	Adds number num to the list.
101	5		Inputs the desired number.
102		addNumber(l,num)	Adds number num to the list.
103	6		Inputs the desired number.
104		addNumber(l,num)	Inputs the desired number.

105	x	ValueError	Error, x is a non numerical value.
106		ui1()	Goes back to the sub-menu.
107	4	mainMenu()	Goes back to the main menu.
108	3	ui3()	Goes to the third feature sub-menu.
109	2		Goes to the second sub-feature.
110	11		Inputs the first number of the interval.
111	6		Inputs the second number of the interval.
112		removeOdd(l,num1,num2)	Returns the odd numbers from the desired interval.
113		ui3()	Goes back to the sub-menu.
114	4	mainMenu()	Goes back to the main menu.
end			