

CSPC 54 : Prolog Assignment

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Instructions :

Create a 3 x 3 grid with numbers initialised from 1 – 9.

after a sequence of operations, the numbers should sum to 50 to 60.

Code :

```
addAtI(0,[H|T],X, [HN|T]):-  
    HN is H+X.
```

```
addAtI(I,[H|T],X,[H|TN]):-  
    IN is I-1,  
    addAtI(IN,T,X,TN).
```

```
addToMatrix([],[]).
```

```
addToMatrix([H|T],[NH|NT]):-  
    addAtI(2,H,2,NH),  
    addToMatrix(T,NT).
```

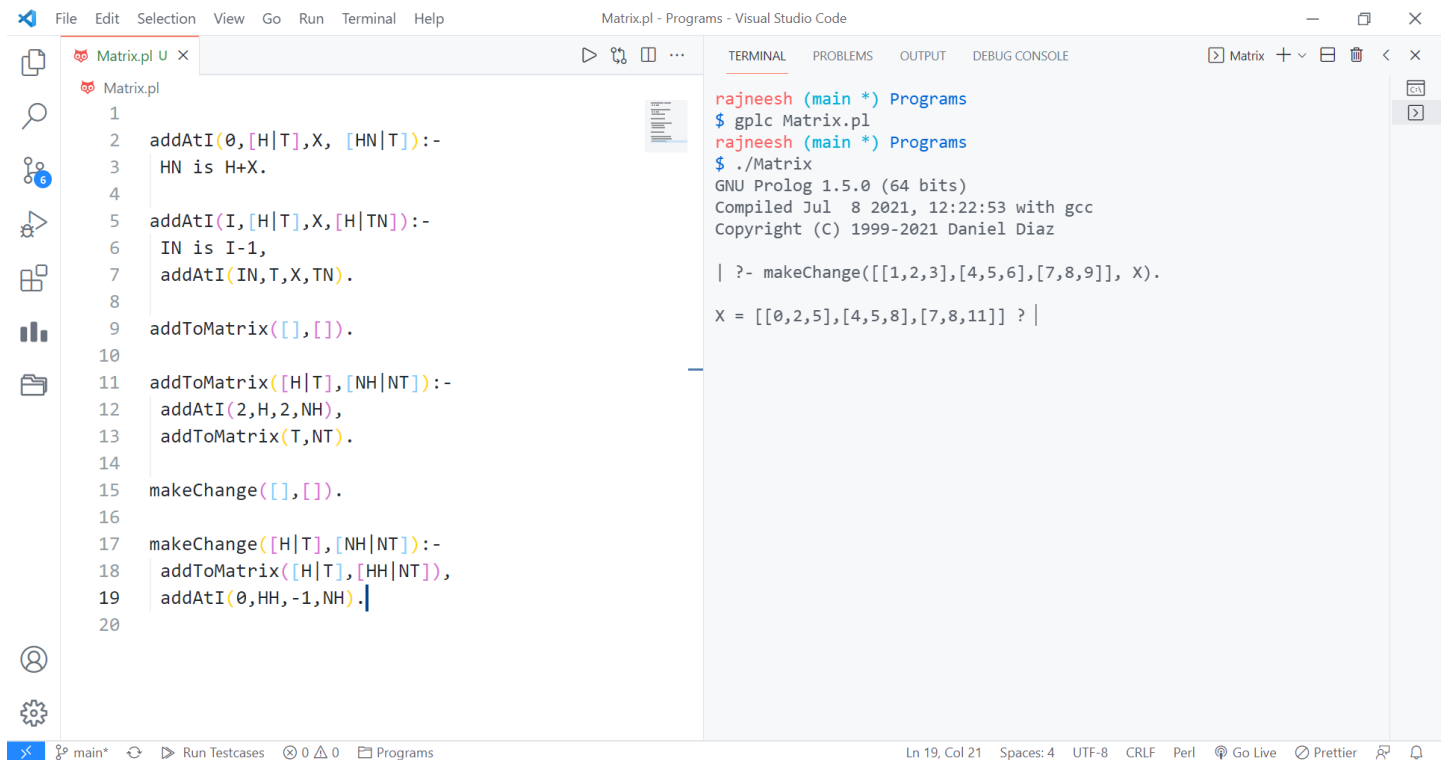
```
makeChange([],[]).
```

```
makeChange([H|T],[NH|NT]):-  
    addToMatrix([H|T],[HH|NT]),  
    addAtI(0,HH,-1,NH).
```

INPUT: makeChange([[1,2,3],[4,5,6],[7,8,9]], X).

OUTPUT: X = [[0,2,5],[4,5,8],[7,8,11]]

Screenshots:



The screenshot displays the Visual Studio Code editor with a file named `Matrix.pl` open. The editor shows a Prolog program with the following code:

```
1
2 addAtI(0,[H|T],X,[HN|T]):-
3   HN is H+X.
4
5 addAtI(I,[H|T],X,[H|TN]):-
6   IN is I-1,
7   addAtI(IN,T,X,TN).
8
9 addToMatrix([],[]).
10
11 addToMatrix([H|T],[NH|NT]):-
12   addAtI(2,H,2,NH),
13   addToMatrix(T,NT).
14
15 makeChange([],[]).
16
17 makeChange([H|T],[NH|NT]):-
18   addToMatrix([H|T],[HH|NT]),
19   addAtI(0,HH,-1,NH).
20
```

The terminal window on the right shows the execution of the program:

```
rajneesh (main *) Programs
$ gplc Matrix.pl
rajneesh (main *) Programs
$ ./Matrix
GNU Prolog 1.5.0 (64 bits)
Compiled Jul  8 2021, 12:22:53 with gcc
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| ?- makeChange([[1,2,3],[4,5,6],[7,8,9]], X).
X = [[0,2,5],[4,5,8],[7,8,11]] ? |
```

The status bar at the bottom indicates the current line is 19, column 21, with 4 spaces, UTF-8 encoding, CRLF line endings, and the Perl interpreter selected.

Sequence of Operation

Increment third element by the value of 2 in every row.