

```

Breadth first path from (2,0) to (13, 18)
(2, 0) -> (2, 1) -> (2, 2) -> (2, 3) -> (2, 4) -> (2, 5) -> (2, 6) -> (2,
7) -> (2, 8) -> (2, 9) -> (2, 10) -> (2, 11) -> (2, 12) -> (2, 13) -> (2,
14) -> (2, 15) -> (2, 16) -> (2, 17) -> (2, 18) -> (3, 18) -> (4, 18) -> (
5, 18) -> (6, 18) -> (7, 18) -> (8, 18) -> (9, 18) -> (10, 18) -> (11, 18)
-> (12, 18) -> (13, 18)
Time: 45.4627 seconds
Cost of path: 94
Total moves: 29

XXSXXXXXXXXXXXXX
XX#XXXXXXXXXXXXX
XX#XXXXXXXXXXXXX
XX#XXXXXXXXXXXXX
XX#XXXXXXXXXXXXX
XX#XXXXXXXXXXXXX
XX#XXXXXXXXXXXXX
XX#XXXXXXXXXXXXX
XX#XXXXXXXXXXXXX
XX#XXXXXXXXXXXXX
XX#XXXXXXXXXXXXX
XX#XX-----XXXXX
XX#X-----XX
XX#XXX-----XX
XX#XXXXXXXX--XX
XX#XXXXXXXXXXXXX
XX#XXXXXXXXXXXXX
XX#XXXXXXXXXXXXX
XX#XXXXXXXXXXXXX
XX#####EF
XXXXXXXXXXXXF--

```

```
Euclidean path from (2,0) to (13, 18)
Path: (2,0) -> (2,1) -> (3,1) -> (3,2) -> (3,3) -> (4,3) -> (4,4) -> (4,5)
-> (5,5) -> (5,6) -> (5,7) -> (6,7) -> (6,8) -> (7,8) -> (7,9) -> (8,9) -
> (9,9) -> (10,9) -> (10,10) -> (11,10) -> (12,10) -> (12,11) -> (13,11) -
> (13,12) -> (13,13) -> (13,14) -> (13,15) -> (13,16) -> (13,17) -> (13,18)
)
Time: 0.0022797 seconds
Cost of path: 118
Total moves: 29

-FSF-----
-F##F-----
--F#F-----
--F##F-----
---F#F-----
---F##F-----
----F#F-----
----F##F-----
-----F#F-----
-----F##F-----
-----F####F--
-----F#####F--
-----###F-
-----##F
-----#F
-----F#F
-----F#F
-----F#F
-----F#F
-----F#F
-----F#F
-----E-
```

[illegible]

Manhattan path from  $(2,0)$  to  $(13, 18)$

```
Path: (2,0) -> (3,0) -> (4,0) -> (5,0) -> (6,0) -> (7,0) -> (8,0) -> (9,0)
      -> (10,0) -> (11,0) -> (12,0) -> (13,0) -> (13,1) -> (13,2) -> (13,3) ->
      (13,4) -> (13,5) -> (13,6) -> (13,7) -> (13,8) -> (13,9) -> (13,10) -> (13,11)
      -> (13,12) -> (13,13) -> (13,14) -> (13,15) -> (13,16) -> (13,17) ->
      (13,18)
```

Time: 0.0002957 seconds

Cost of path: 74

Total moves: 29

```
-FS#####F
```

```
--FFFFFFFFFFFF#F
```

-----F#F

-----F#F

-----F#F

-----F#F

-----F#F

-----F#F

-----F#F

-----F#F

-----F#F

-----F#F  
F#F

-----F#F  
#F

-----#1  
-----#5

-----F#F

-----F#F

-----F#F

-----F#F

-----F#F

-----E-

\_\_\_\_\_

Uniform Cost Search from (2,0) to (13,18)

Path: (3,0) -> (4,0) -> (5,0) -> (6,0) -> (7,0) -> (8,0) -> (9,0) -> (10,0) -> (11,0) -> (11,1) -> (10,1) -> (9,1) -> (8,1) -> (8,2) -> (8,3) -> (7,3) -> (6,3) -> (5,3) -> (5,4) -> (4,4) -> (4,5) -> (4,6) -> (3,6) -> (2,6) -> (2,7) -> (1,7) -> (1,8) -> (1,9) -> (1,10) -> (1,11) -> (1,12) -> (2,12) -> (2,13) -> (3,13) -> (4,13) -> (5,13) -> (5,14) -> (6,14) -> (7,14) -> (7,15) -> (7,16) -> (8,16) -> (9,16) -> (10,16) -> (11,16) -> (12,16) -> (13,16) -> (13,17) -> (14,17) -> (14,18) -> (13,18)

Time: 0.0126368 seconds

Cost: 100

Moves: 50

```
-FS#####FFF
F---FFF-####F-F
FF-FFFFFF#FFF-F-
FFFFFF####FF-FF-
FFFF##F-FF-F-FF
FFFF#F-FFF-F-FF
FF#####FF-FF
F####F-FFFFF-FF
F#####F-FFF-F
F#####F-FFF-F
F#FF-----FF-F-
F#F-----FF-
F####F-----FF
-F#####-FFF
-FFFF#####F
F-F-FFF#FFFFFFF
FFF-FFF#####F
--FF-F-FF-FFF##
--F-F-FFFF-F-E#
-----
```