CSE 259 - Logic in Computer Science

Recitation-4

Project-1: Printing ASU Part 1

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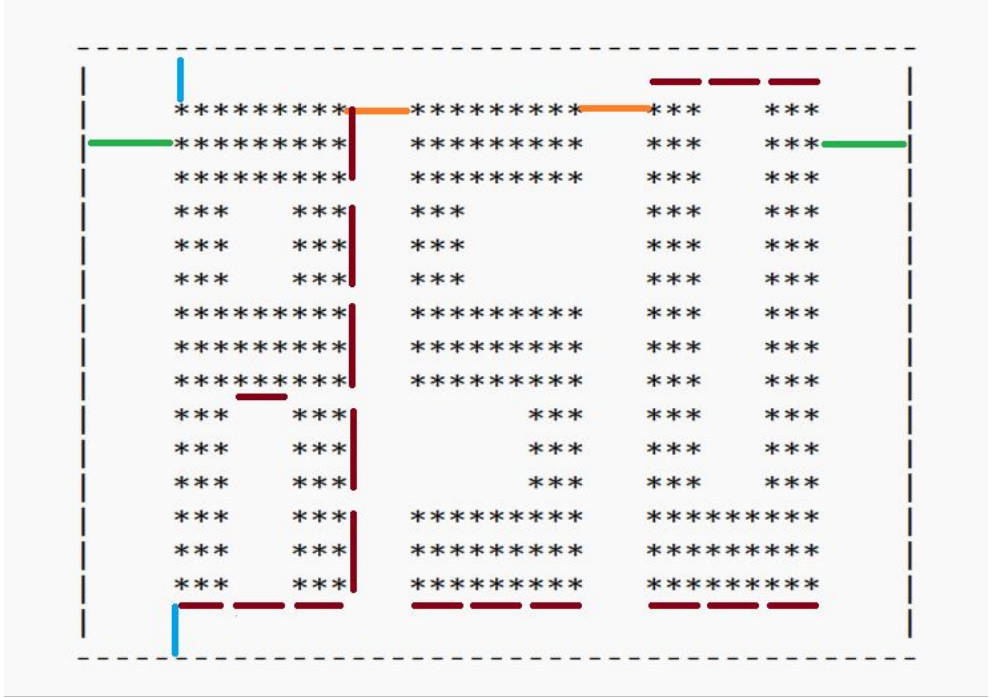
Project-1

- Use the query ***asu(LeftRightMargin, BottomTopMargin, SpaceBetweenCharacters, FontSize)***
- The output should look like the following



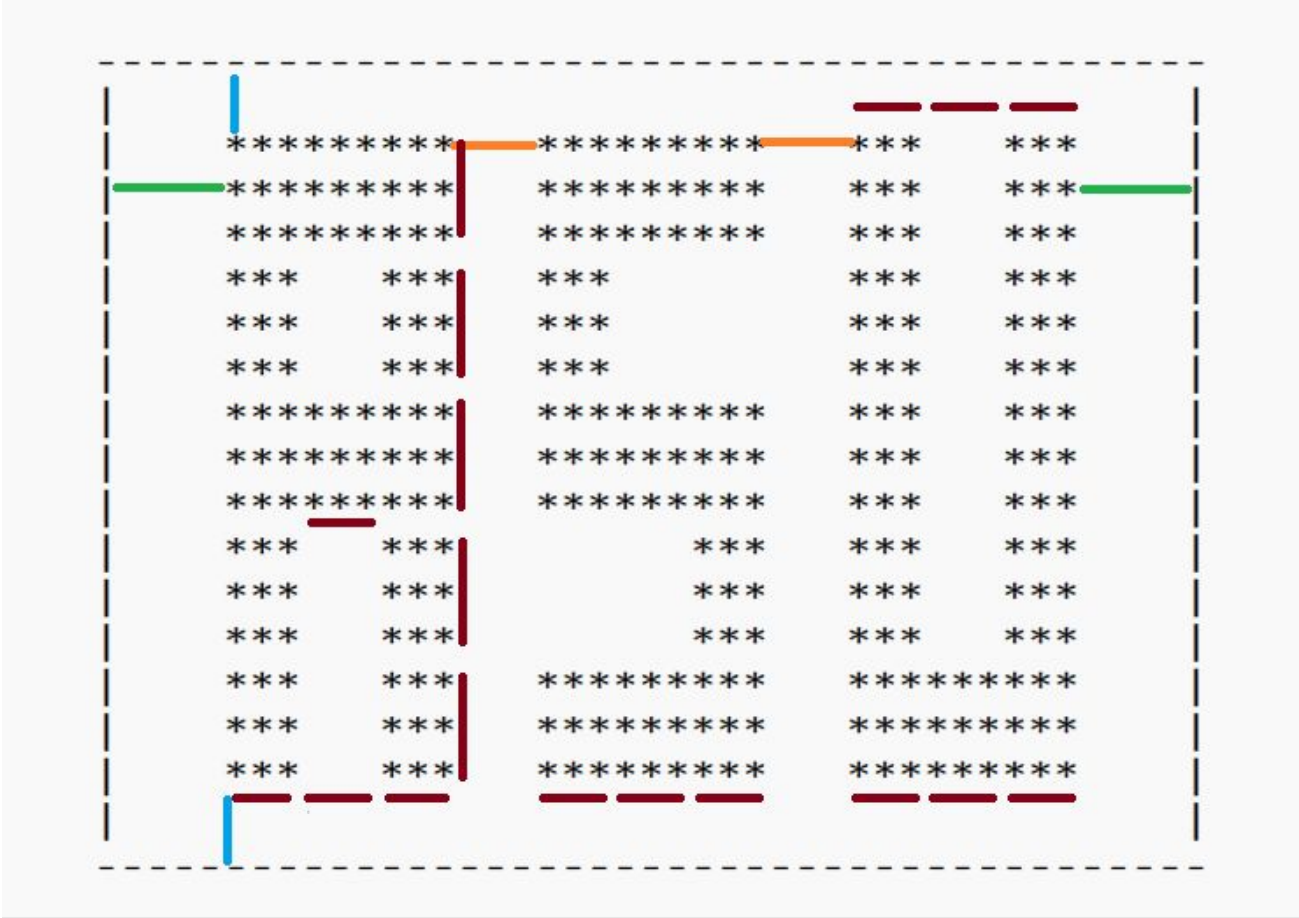
Project-1

LeftRightMargin = 4

BottomTopMargin = 1

SpaceBetweenCharacters = 3

FontSize = 3



Understanding the segment and FontSize

- Each letter can be divided horizontally into 3 segments.
- Each segment will have FontSize number of characters
- Each letter can be divided vertically into 5 segments
- Each segment will have FontSize number of characters

Utility codes

```
drawSymbol(Symbol, 0).
drawSymbol(Symbol, N) :- N > 0, write(Symbol), N1 is N - 1, drawSymbol(Symbol, N1).
```

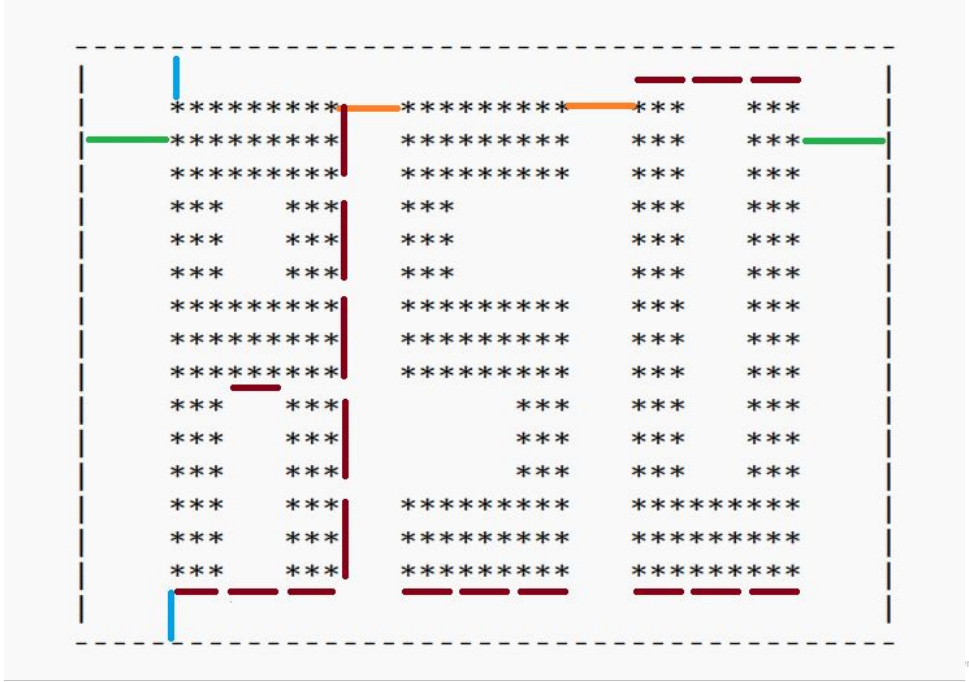
- If N = 0 then, nothing to print
- Else,
  - we check if N > 0
  - If true then print the character of our choice and move forward
  - We assign N1 = N - 1
  - Call the rule recursively with the new value of N

Drawing the rectangle - horizontal line

Total characters = (LeftRightMargin x 2) + (SpaceBetweenCharacters x 2) + **(3 x 3 x FontSize) + 2**

(3 x 3 x FontSize): 3 letters. Each characters can be divided into 3 segments horizontally. Each segment has FontSize number of characters.

+2 is for the 2 vertical bars!



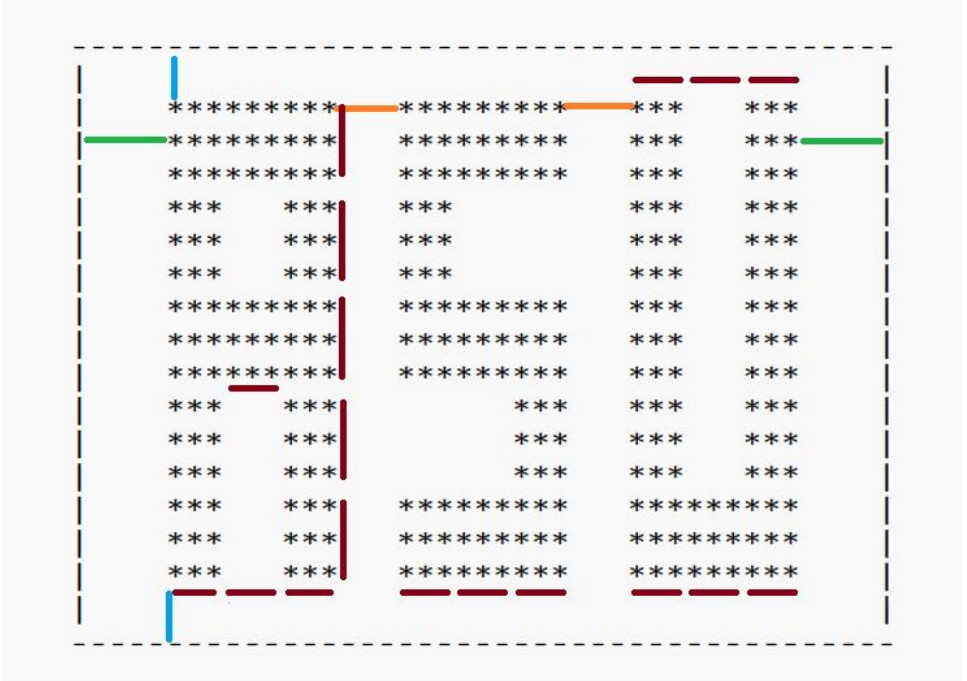
Drawing the rectangle - horizontal line

```
drawSymbol(Symbol, 0).
drawSymbol(Symbol, N) :- N > 0, write(Symbol), N1 is N - 1, drawSymbol(Symbol, N1).
```

```
% e:/Programming/TA/ASU-CSE-259-Pr
?- drawHorizontalLine('-', 20).
--------------------
true .
```

Drawing the rectangle - vertical line

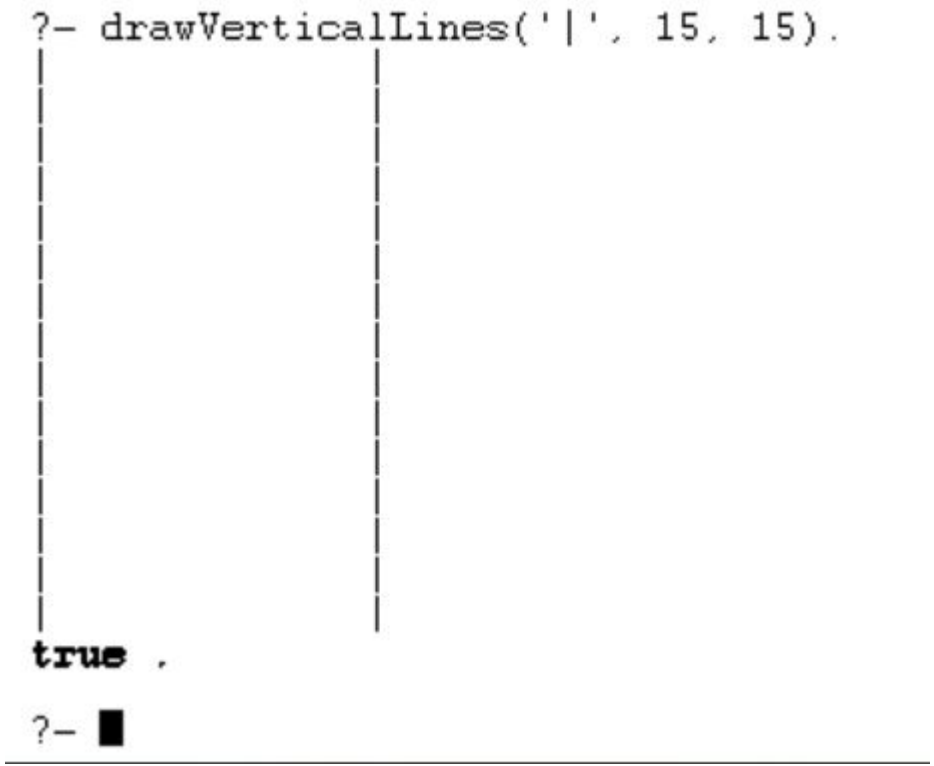
Total characters = (BottomTopMargin x 2) + (5 * FontSize)



Drawing the rectangle - vertical line

```
drawVerticalLines(Symbol, 0, Width).
drawVerticalLines(Symbol, Height, Width) :-
    Height > 0,
    write(Symbol),
    drawSymbol(' ', Width - 2),
    write(Symbol),
    nl,
    Height1 is Height - 1,
    drawVerticalLines(Symbol, Height1, Width).
```

Drawing the rectangle - vertical line



Drawing the rectangle - combining everything

```
drawRectangle(LeftRightMargin, BottomTopMargin, SpaceBetweenCharacters, FontSize) :-
    integer(LeftRightMargin), integer(BottomTopMargin), integer(SpaceBetweenCharacters), integer(FontSize),
    Width is (LeftRightMargin * 2 + SpaceBetweenCharacters * 2 + FontSize * 3 * 3 + 2),
    Height is (BottomTopMargin * 2 + FontSize * 5),
    drawHorizontalLine('-', Width),
    nl,
    drawVerticalLines('|', Height, Width),
    drawHorizontalLine('-', Width).
```

Drawing the rectangle - combining everything

```
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?- drawRectangle(2, 1, 3, 3).
```

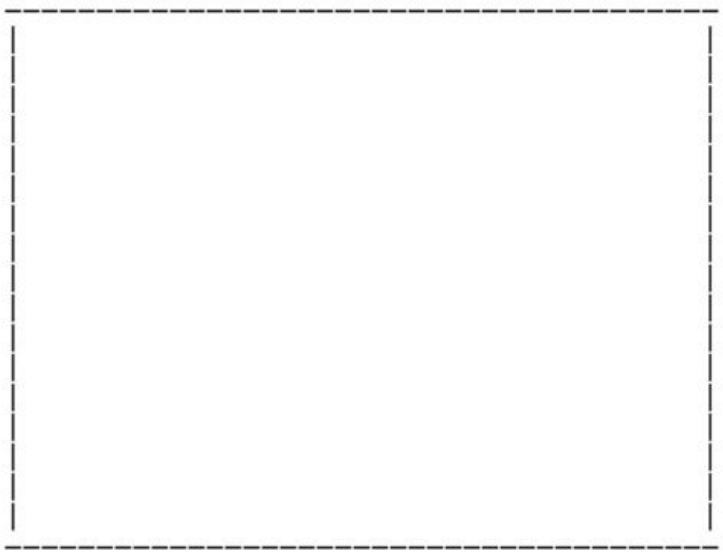

```
true .

?-
```