Documentation Christmas Tree

Rico Ukro

November 27, 2022, Kesselsdorf

Description

This program prints out a randomly generated christmas to the linux terminal. It has been tested under Ubuntu 22.04.

Structograms

globals

```
STAR
          {star pattern}
TRUNK
          {trunk pattern}
BACKGRÒUND_ELEMÉNT
          {background element char}
START_CHAR _ELEMENT
          {tree start element}
FILLING_ÈLEMENT
          {tree filling element}
STOP_CHÀR _ELEMENT
          {tree stop element}
ORNAMENTS
\begin{array}{c} \{ \text{holds ornaments} \} \\ \text{ORNAMENT\_FREQUENCY} \end{array}
          {divider to reduce the random occurrence of
          ornaments)
RED
          {string color red}
BROWN {string color brown}
YELLOW
          {string color yellow}
GREEN {string color green}
DARK_GREEN
          {string color dark green}
WHITE
          {string color white}
X_OFFSET
          {horizontal tree offset in terminal}
Y_OFFSEŤ
          {vertical tree offset in terminal}
```

function \max

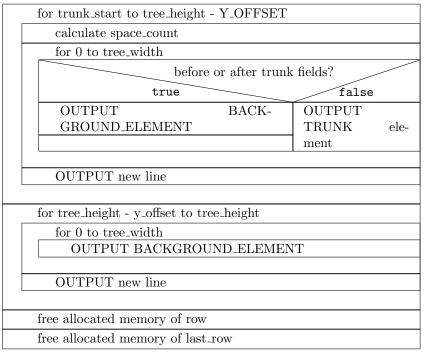
```
uint max (const uint val1, const uint val2)

return val1 > val2 ? val1 : val2
```

function main

set top_height to random value			
calculate top_width			
calculate total tree_width			
calculate total tree_height			
set top_start			
set trunk_start			
allocate memory for row			
allocate memory for last_row			
set terminal color to WHITE			
for 0 to Y_OFFSET			
for 0 to tree_width			
OUTPUT BACKGROUND_ELEMENT			
OUTPUT new line			
4 11 0 11 0 11 0 11			
for Y_OFFSET to top_start			
calculate space_count			
0 to tree_width			
before	or after star	fields?	
true		fals	е
OUTPUT	BACK-	OUTPUT	STAR
GROUND_ELEMENT		element	
OUTPUT new line			
for top_start to trunk_start			
calculate line_tree_width			
calculate line_tree_width calculate space_count			
calculate space_count	n first row of	top?	
calculate space_count not in	n first row of		1
calculate space_count not in true	n first row of		lse
calculate space_count not in true last_row = row	n first row of		lse
calculate space_count not in true last_row = row 0 to tree_width			lse
calculate space_count not in true last_row = row 0 to tree_width OUTPUT colored tree ele	ement		lse
calculate space_count not in true last_row = row 0 to tree_width	ement		lse
calculate space_count not in true last_row = row 0 to tree_width OUTPUT colored tree ele assign tree element to row	ement		lse
calculate space_count not in true last_row = row 0 to tree_width OUTPUT colored tree ele	ement		lse

function main continued



Future Improvements

- Animated ornaments in tree
- Add background music
- Find out, how to get a fancier yellow color for the star

Personal summary

I learned a lot about programming in ANSI-C. Also this is my first \LaTeX TeX-document.

Thanks to Professor Hara for this nice exercise.