PlottingPuzzle2

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```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union

## === JACK-O-LANTERN PLOTTING ACTIVITY ===

## Dataset preview:

##    y_position x_start x_end bar_width variable_a variable_b variable_c
## 1           1       0    20        20          1      TypeF         37
## 2           2       0    20        20          3      TypeF         41
## 3           3       0    20        20          3      TypeF         38
## 4           4       0     2         2          2      TypeF          1
## 5           4       2     8         6         10      TypeB         14
## 6           4       8    12         4         35      TypeD          9
## 7           4      12    18         6         10      TypeB         12
## 8           4      18    20         2          4      TypeF          3
## 9           5       0     2         2          5      TypeF          4
## 10          5       2     8         6         14      TypeB         12
## 11          5       8    12         4         31      TypeD          8
## 12          5      12    18         6         14      TypeA         11
## 13          5      18    20         2          3      TypeF          6
## 14          6       0     3         3          2      TypeF          3
## 15          6       3     8         5         15      TypeA         13
##    variable_d sum_check category
## 1       Lower        38    CAT_5
## 2       Lower        44    CAT_5
## 3       Lower        41    CAT_5
## 4       Lower         3    CAT_5
## 5       Lower        24    CAT_1
## 6       Lower        44    CAT_3
## 7       Lower        22    CAT_1
## 8       Lower         7    CAT_5
## 9       Lower         9    CAT_5
```

```
## 10      Lower        26    CAT_1
## 11      Lower        39    CAT_3
## 12      Lower        25    CAT_1
## 13      Lower         9    CAT_5
## 14      Lower         5    CAT_5
## 15      Lower        28    CAT_1

##
## Total observations: 72

##
## Dataset saved to: jackolantern_puzzle_data.csv

## === STUDENT INSTRUCTIONS ===

## Welcome to the Jack-o-Lantern Plotting Challenge!

## Your goal: Create a horizontal bar chart that reveals a spooky jack-o-lantern face.

## STEP 1: Load and explore the data

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## The dataset contains these variables:

## - y_position: The vertical position of each bar (row number)

## - x_start: Where each bar segment starts horizontally

## - x_end: Where each bar segment ends horizontally

## - bar_width: The width of each bar segment

## - variable_a, variable_b, variable_c, variable_d: Mystery variables!

## - sum_check, category: More clues to help you

## STEP 2: Create new variables

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## You need to create a 'color_group' variable that assigns colors based on these rules:

## 1. ORANGE: When category == 'CAT_1' (this is the pumpkin body)

## 2. BLACK: When category == 'CAT_2' (these are the eyes)

## 3. BLACK: When category == 'CAT_3' (this is the mouth)
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## 4. DARKGREEN: When category == 'CAT_4' (this is the stem)

## 5. WHITE: When category == 'CAT_5' (this is the background)

## STEP 3: Create the horizontal bar chart

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## Use ggplot2 to create a horizontal bar chart with:

## - y_position on the y-axis

## - Bars that span from x_start to x_end on the x-axis

## - Colors determined by your color_group variable

## - Use geom_rect() or geom_segment() with appropriate aesthetics

## HINTS:

## - geom_rect() needs: xmin, xmax, ymin, ymax aesthetics

## - For horizontal bars: ymin = y_position - 0.4, ymax = y_position + 0.4

## - Use scale_fill_manual() or scale_color_manual() to set specific colors

## - Remove grid lines and axes for a cleaner look

## - Use coord_fixed() to maintain proper proportions

## BONUS CHALLENGE:

## Can you figure out what variable_a, variable_b, and variable_c represent?

## Try exploring their relationship to the categories!

## ========================================

## === SOLUTION CODE (FOR INSTRUCTOR) ===

##
## # Load the data
## library(ggplot2)
## library(dplyr)
##
## data <- read.csv("jackolantern_puzzle_data.csv")
##
## # STEP 1: Create the color_group variable
## plot_data <- data %>%
```
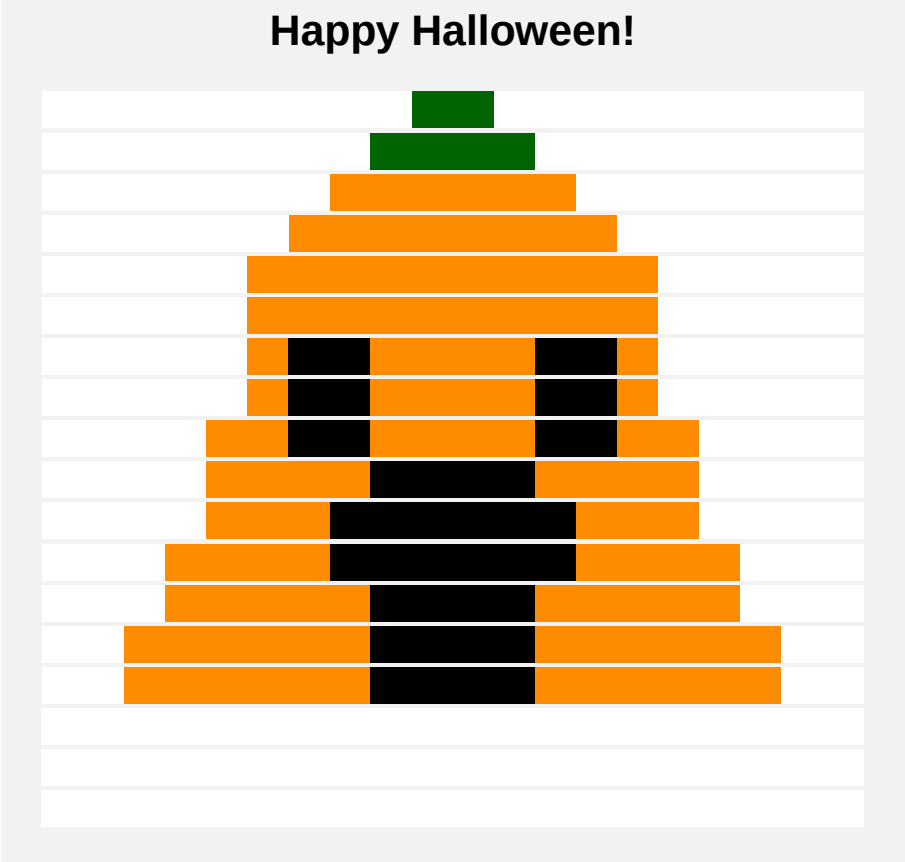

```
##   mutate(
##     color_group = case_when(
##       category == "CAT_1" ~ "ORANGE",
##       category == "CAT_2" ~ "BLACK",
##       category == "CAT_3" ~ "BLACK",
##       category == "CAT_4" ~ "DARKGREEN",
##       category == "CAT_5" ~ "WHITE",
##       TRUE ~ "UNKNOWN"
##     )
##   )
##
## # STEP 2: Create the horizontal bar chart
## jackolantern_plot <- ggplot(plot_data) +
##   geom_rect(aes(xmin = x_start, xmax = x_end,
##                 ymin = y_position - 0.45, ymax = y_position + 0.45,
##                 fill = color_group),
##             color = NA) +
##   scale_fill_manual(values = c(
##     "ORANGE" = "darkorange",
##     "BLACK" = "black",
##     "DARKGREEN" = "darkgreen",
##     "WHITE" = "white"
##   )) +
##   theme_void() +
##   theme(
##     legend.position = "none",
##     plot.title = element_text(hjust = 0.5, size = 16, face = "bold"),
##     plot.background = element_rect(fill = "gray95", color = NA)
##   ) +
##   coord_fixed(ratio = 1) +
##   labs(title = "Happy Halloween! ")
##
## print(jackolantern_plot)
##
## # BONUS: Explore the mystery variables
## cat("\n=== BONUS EXPLORATION ===\n")
## cat("variable_a by category:\n")
## print(plot_data %>% group_by(category) %>% summarise(mean_a = mean(variable_a)))
## cat("\nvariable_b by category:\n")
## print(table(plot_data$category, plot_data$variable_b))

##
##
## === EXECUTING SOLUTION TO VERIFY ===
```




```
##
## Solution verified! Jack-o-lantern displays correctly.
```