Using the modify_depth() function from the purrr package to apply a function at a specified level of a nested list

Step 1: Create a nested list in R.

```
# Create a nested list which will store Site and Temperature
# information for the Winter and Summer seasons in the years
# 2016 and 2017.   Within each season of a year, Site and
# Temperature will be stored in a list.  The end goal is to
# eventually convert that list to a data frame.

yearly_data <- vector("list", length=2)

names(yearly_data) <- c("2016","2017")



yearly_data[["2016"]] <- vector("list", length=2)
names(yearly_data[["2016"]]) <- c("Winter","Summer")

yearly_data[["2016"]][["Winter"]] <- list(Site=c("01","02","03"),
                                          Temp=c(15, 17, 20))

yearly_data[["2016"]][["Summer"]] <- list(Site=c("01","02","03"),
                                          Temp=c(14, 16, 19))



yearly_data[["2017"]] <- vector("list", length=2)
names(yearly_data[["2017"]]) <- c("Winter","Summer")


yearly_data[["2017"]][["Winter"]] <- list(Site=c("01","02","03"),
                                          Temp=c(16, 18, 21))

yearly_data[["2017"]][["Summer"]] <- list(Site=c("01","02","03"),
                                          Temp=c(17, 19, 22))
```

Step 2: View the nested list.

yearly_data

```
> yearly_data
$`2016`
$`2016`$Winter
$`2016`$Winter$Site
[1] "01" "02" "03"

$`2016`$Winter$Temp
[1] 15 17 20


$`2016`$Summer
$`2016`$Summer$Site
[1] "01" "02" "03"

$`2016`$Summer$Temp
[1] 14 16 19



$`2017`
$`2017`$Winter
$`2017`$Winter$Site
[1] "01" "02" "03"

$`2017`$Winter$Temp
[1] 16 18 21


$`2017`$Summer
$`2017`$Summer$Site
[1] "01" "02" "03"

$`2017`$Summer$Temp
[1] 17 19 22
```

Winter

Summer

Winter

Summer

Step 3: Examine the nested list structure.

str(yearly_data)

```
> str(yearly_data)
List of 2
 $ 2016:List of 2
  ..$ Winter:List of 2
  .. ..$ Site: chr [1:3] "01" "02" "03"
  .. ..$ Temp: num [1:3] 15 17 20
  ..$ Summer:List of 2
  .. ..$ Site: chr [1:3] "01" "02" "03"
  .. ..$ Temp: num [1:3] 14 16 19
 $ 2017:List of 2
  ..$ Winter:List of 2
  .. ..$ Site: chr [1:3] "01" "02" "03"
  .. ..$ Temp: num [1:3] 16 18 21
  ..$ Summer:List of 2
  .. ..$ Site: chr [1:3] "01" "02" "03"
  .. ..$ Temp: num [1:3] 17 19 22
>
```

```
install.packages("data.tree")
library(data.tree)
```

FromListSimple(yearly_data)

```
> FromListSimple(yearly_data)
      levelName
1 Root
2  ¦--2016
3  ¦   ¦--Winter
4  ¦   °--Summer
5  °--2017
6      ¦--Winter
7      °--Summer
```

Level 1 (Year)

Level 2 (Season)

Step 4: Site and Temp information for each season within each year is stored in a list. Apply the modify_depth() function from the purrr package to convert that list to a data frame.

```
install.packages("purrr")
library(purrr)


yearly_data_mod <- modify_depth(yearly_data,2, as.data.frame)
```

Notes:

modify_depth() will cycle through each year and season combination to find the list storing the Site and Temp data. Once it finds that list, it will convert it to a data frame.

Because we specified the second argument of modify_depth() as being equal to 2, modify_depth() will know to look first within each year (level 1) and then within each season for that year (level 2) in order to find the list storing the Site and Temp information. Once it finds the list, modify_depth() will apply the function as.data.frame() to it in order to convert it to a data frame.

Example of List	Example of Data Frame
$`2017`$Summer $`2017`$Summer$Site [1] "01" "02" "03" $`2017`$Summer$Temp [1] 17 19 22	$`2017`$Summer Site Temp 1 01 17 2 02 19 3 03 22

Step 5: View the modified nested list.

```
yearly_data_mod
```

```
> yearly_data_mod
$`2016`
$`2016`$Winter
  Site Temp
1   01   15
2   02   17
3   03   20

$`2016`$Summer
  Site Temp
1   01   14
2   02   16
3   03   19


$`2017`
$`2017`$Winter
  Site Temp
1   01   16
2   02   18
3   03   21

$`2017`$Summer
  Site Temp
1   01   17
2   02   19
3   03   22
```

Step 6: Examine the structure of the modified nested list.

```
str(yearly_data_mod)
```

```
> str(yearly_data_mod)
List of 2
 $ 2016:List of 2
  ..$ Winter:'data.frame':      3 obs. of  2 variables:
  .. ..$ Site: Factor w/ 3 levels "01","02","03": 1 2 3
  .. ..$ Temp: num [1:3] 15 17 20
  ..$ Summer:'data.frame':      3 obs. of  2 variables:
  .. ..$ Site: Factor w/ 3 levels "01","02","03": 1 2 3
  .. ..$ Temp: num [1:3] 14 16 19
 $ 2017:List of 2
  ..$ Winter:'data.frame':      3 obs. of  2 variables:
  .. ..$ Site: Factor w/ 3 levels "01","02","03": 1 2 3
  .. ..$ Temp: num [1:3] 16 18 21
  ..$ Summer:'data.frame':      3 obs. of  2 variables:
  .. ..$ Site: Factor w/ 3 levels "01","02","03": 1 2 3
  .. ..$ Temp: num [1:3] 17 19 22
```

Question:

How can we transform the values of the Temp variable from degrees Celsius to degrees Fahrenheit for every season within each year?

Orlando Mezquita (Twitter handle @orlandomezquita) suggested that we should set up an e-mail list for R users interested in joining the **purrr resolution for 2018**, so they can get access to all the purrr learning materials that will be shared and exchange feedback. If you'd like to join the e-mail list, please send your e-mail address to @IsabellaGhement via DM on Twitter or e-mail it to isabella@ghement.ca.

Web: www.ghement.ca