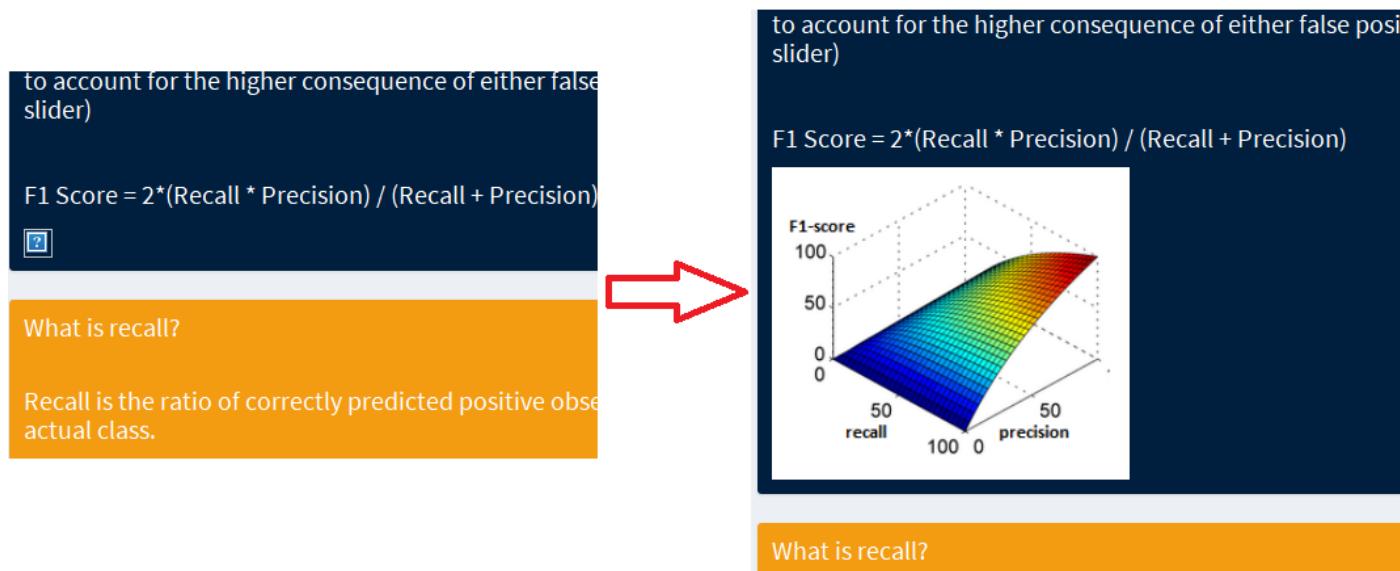


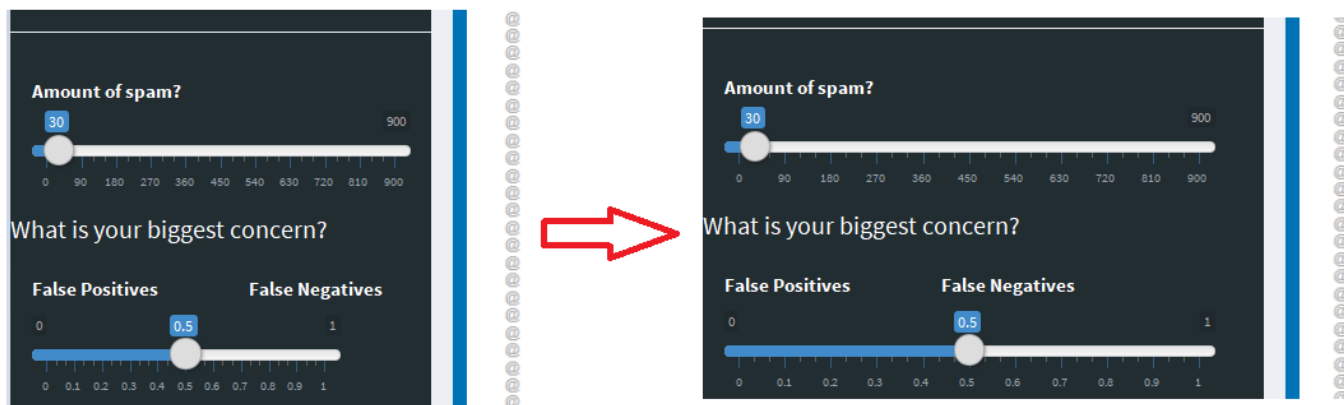
## Podniková analytika (Cvičenie – Dashboard)

### Úlohy:

1. Ako svoj pracovný priečnik použite priečnik „0. classifier (original)“, nainštalujte a načítajte knižnice, spustíte aplikáciu.
2. Pridajte do priečinka global.R skript a presuňte do neho všetky výrazy, ktoré do neho majú patriť.
3. Pridajte chýbajúci obrázok 'f1-score definition.png' do priečinka aplikácie tak, aby ho dashboard vedel zobraziť.



4. Zväčšíte šírku sidebaru na 400 a šírku oboch sliderov na 380 pixelov.

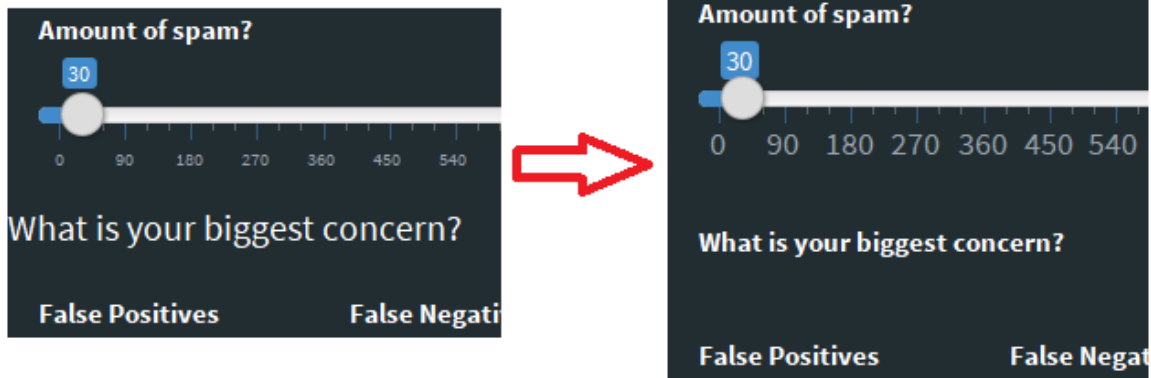


5. Zmeňte farbu a ikonu infoBoxu s názvom "F1-score" na ľubovoľnú inú.



6. Pridajte do ui.R na vhodné miesto kód, ktorý je v skripte „css\_pre\_slider.R“ (priečnik 'CSS kód pre slider').

7. Upravte výraz na r.20 "h4("What is your biggest concern?")", aby output vyzeral rovnako ako text "Amount of spam?".



8. Zmeňte orientáciu z row-based na column-based-layout v tabItem s tabName = "learning\_ressources".

**What is an F1 score?**  
F1 Score is the weighted average of Precision and Recall. Therefore, this score takes both false positives and false negatives into account. Intuitively it is not as easy to understand as accuracy, but F1 is usually more useful than accuracy, especially if you have an uneven class distribution. Accuracy works best if false positives and false negatives have similar cost. If the cost of false positives and false negatives are very different, it's better to look at both Precision and Recall. We can add a weighting factor to account for the higher consequence of either false positives or negatives (second slider).

$$F1\ Score = 2 * (Recall * Precision) / (Recall + Precision)$$

**What is precision?**  
Precision is the ratio of correctly predicted positive observations to the total predicted positive observations. High precision relates to the low false positive rate.  
 $Precision = TP / TP + FP$

**What is recall?**  
Recall is the ratio of correctly predicted positive observations to the all observations in actual class.  
 $Recall = TP / TP + FN$

**What is accuracy?**  
Accuracy is the most intuitive performance measure and it is simply a ratio of correctly predicted observation to the total observations. One may think that, if we have high accuracy then our model is best. Yes, accuracy is a great measure, but only when you have symmetric datasets where values of false positive and false negatives are almost same. Therefore, you have to look at other parameters to evaluate the performance of your model.  
 $Accuracy = TP + TN / TP + FP + FN + TN$

**What is an F1 score?**  
F1 Score is the weighted average of Precision and Recall. Therefore, this score takes both false positives and false negatives into account. Intuitively it is not as easy to understand as accuracy, but F1 is usually more useful than accuracy, especially if you have an uneven class distribution. Accuracy works best if false positives and false negatives have similar cost. If the cost of false positives and false negatives are very different, it's better to look at both Precision and Recall. We can add a weighting factor to account for the higher consequence of either false positives or negatives (second slider).

$$F1\ Score = 2 * (Recall * Precision) / (Recall + Precision)$$

**What is precision?**  
Precision is the ratio of correctly predicted positive observations to the total predicted positive observations. High precision relates to the low false positive rate.  
 $Precision = TP / TP + FP$

**What is recall?**  
Recall is the ratio of correctly predicted positive observations to the all observations in actual class.  
 $Recall = TP / TP + FN$

**What is accuracy?**  
Accuracy is the most intuitive performance measure and it is simply a ratio of correctly predicted observation to the total observations. One may think that, if we have high accuracy then our model is best. Yes, accuracy is a great measure, but only when you have symmetric datasets where values of false positive and false negatives are almost same. Therefore, you have to look at other parameters to evaluate the performance of your model.  
 $Accuracy = TP + TN / TP + FP + FN + TN$

9. Pridajte nový box() element,  
a) ktorý bude identický s obrázkom;

This plot shows 900 emails, that have been divided into regular ones (grey) and actual spams (red). You can draw a rectangle with your mouse to simulate a prediction from an classification algorithm. All points in your selection get the predicted class <spam>, the others <non-spam>.

**Short explanations**

Precision =  $TP / TP + FP$

F1 Score =  $2 * (Recall * Precision) / (Recall + Precision)$

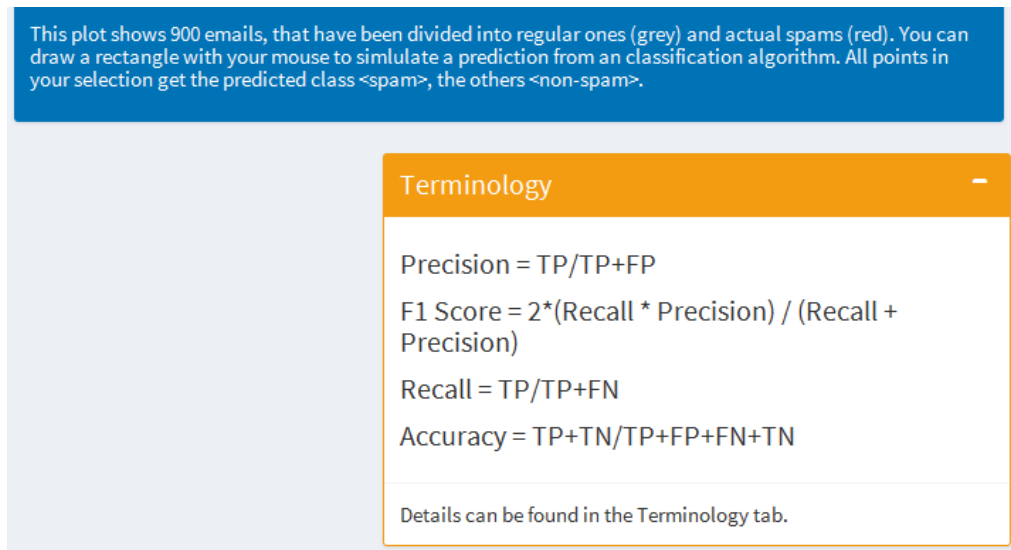
Recall =  $TP / TP + FN$

Accuracy =  $TP + TN / TP + FP + FN + TN$

Details are in the Explanations tab.

Vytvorte

b) zarovnajte novo pridany box doprava pod modry box.



10. V tejto úlohe použite tieto inputy: **input\$beta** a **input\$amount**.

- Vytvorte reaktívnu premennú tak, aby pri každej zmene hodnoty slidera sa ich aktuálna hodnota vypísala do R konzoly.

Logika: prvý krát sa hodnoty sliderov objavia v konzole pri štarte aplikácie a každý ďalší krát:

a) iba aktuálna hodnota toho slidera, ktorý bol zmenený používateľom;

```
Listening on http://127.0.0.1:5368
beta input is: 0.5
amount input is: 30
amount input is: 193
amount input is: 538
beta input is: 0.4
beta input is: 0.28
beta input is: 0.39
beta input is: 0.72
beta input is: 0.91
```

b) aktuálne hodnoty oboch sliderov naraz, bez ohľadu na to, aká hodnota ktorého slidera sa zmení (ak sa hodnota jedného slidera zmení).

```
Listening on http://127.0.0.1:5368
beta input is: 0.5
amount input is: 30
beta input is: 0.7
amount input is: 30
beta input is: 0.7
amount input is: 386
beta input is: 0.7
amount input is: 176
```