Funnel Analysis

Goal

The goal is to perform funnel analysis for an e-commerce website.

Typically, websites have a clear path to conversion: for instance, you land on the home page, then you search, select a product, and buy it. At each of these steps, some users will drop off and leave the site. The sequence of pages that lead to conversion is called 'funnel'.

Data Science can have a tremendous impact on funnel optimization. Funnel analysis allows to understand where/when our users abandon the website. It gives crucial insights on user behavior and on ways to improve the user experience. Also, it often allows to discover bugs.

Challenge Description

You are looking at data from an e-commerce website. The site is very simple and has just 4 pages:

- The first page is the **home page**. When you come to the site for the first time, you can only land on the home page as a first page.
- From the home page, the user can perform a search and land on the **search page**.
- From the search page, if the user clicks on a product, she will get to the **payment page**, where she is asked to provide payment information in order to buy that product.
- If she does decide to buy, she ends up on the **confirmation page**

The company CEO isn't very happy with the volume of sales and, especially, of sales coming from new users. Therefore, she asked you to investigate whether there is something wrong in the conversion funnel or, in general, if you could suggest how conversion rate can be improved.

Specifically, she is interested in :

- **A full picture of funnel conversion rate** for both desktop and mobile
- Some insights on **what the product team should focus on** in order to improve conversion rate as well as anything you might discover that could help improve

conversion rate.

Data

We have 5 tables downloadable by clicking **here**.
All the tables refer to *only* the user first experience on the site. The 5 tables are:

```
"user_table" - info about the user
```

Columns:

- **user_id** : the Id of the user. It is unique by user and can be joined to user id in all other tables
- **date** : the date when the user firstly landed on the site
- **device** : user device. Can be mobile or desktop
- **sex** : male/female

```
"home_page_table" - Users who landed on the home page
```

Columns:

- **user_id** : the Id of the user. It is unique by user and can be joined to user id in all other tables
- **page** : it is always home_page.

```
"search_page_table" - Users who landed on the search_page
```

Columns:

- **user_id** : the Id of the user. It is unique by user and can be joined to user id in all other tables
- **page** : it is always search_page

```
"payment_page_table" - Users who landed on the payment_page
```

Columns:

- **user_id** : the Id of the user. It is unique by user and can be joined to user id in all other tables
- **page** : it is always payment_page

```
   "payment_confirmation_table" - Users who landed on the
payment_confirmation_table. That is, these are the users who bought the product.
```

Columns:

- **user_id** : the Id of the user. It is unique by user and can be joined to user id in all other tables
- **page** : it is always payment_confirmation_page

Example

```
   Let's check one user through the funnel
```

subset(user_table,user_id == 1659)

Column Name	Value	Description
user_id	1659	The Id of the user
date	2015-01-01	This user firstly hit the site on Jan, 1st.
device	Mobile	User was using mobile
sex	Female	Was a female

```
   Let's check if she hit the home page (she should, since all users should hit
the home page on their first visit)
```

subset(home_page_table,user_id == 1659)

Column Name	Value	Description
user_id	1659	User id.
page	home_page	Yep, on Jan, 1st she visited the home page

```
    Let's check if she hit the search page
```

subset(search_page_table,user_id == 1659)

Column Name	Value	Description
user_id	1659	User id.
page	search_page	Yep, on Jan, 1st she visited the search page too.

Let's check if she hit the payment page

subset(payment_page_table,user_id == 1659)

<0 rows> (or 0-length row.names) # No. She never visited the payment page. User 1659 landed on the site on Jan, 1st using mobile. From the home page, she then went to the search page and then left the site.

```
    Let's check one user who actually bought the product
```

head (payment_confirmation_table, 1)

Column Name	Value	Description
user_id	123100	User id.
page	payment_confirmation_page	This user bought the product! Went all the way through the funnel! Success!