# Relax Inc Challenge

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After importing the data frames I first used this line of code to find which users were considered adopted .

```
# creates a list of users who have logged in on three separate days in at least one seven-day period
adopted_users_list = []
for user in engagement_df['user_id'].unique():
    user_df = engagement_df[engagement_df['user_id'] == user]
    user_df = user_df.set_index('time_stamp')
    user_df = user_df.resample('D').count()
    user_df = user_df[user_df['visited'] > 0]
    user_df = user_df.rolling(window=7).sum()
    if user_df['visited'].max() >= 3:
        adopted_users_list.append(user)
```

I then took a look at the feature correlations to user adoption. I found that the last session time was highly correlated. Which makes intuitive sense because users who continually use your product are more likely to use it lately.

```
adopted_user                 1.000000
last_session_creation_time   0.248590
org_id                       0.063737
GUEST_INVITE                 0.043657
SIGNUP_GOOGLE_AUTH           0.034821
invited_by_user_id           0.021602
opted_in_to_mailing_list     0.006780
SIGNUP                       0.006635
enabled_for_marketing_drip   0.005074
ORG_INVITE                  -0.003146
PERSONAL_PROJECTS           -0.075949
creation_time               -0.088143
```

I then created a random forest classifier to look at which features were important to the model. It had a 97% accuracy score which means we can assess these importances as accurate indicators. This also showed last session time as the most important, but also creation time as a valuable indicator.

```
                           importance
last_session_creation_time    0.681473
creation_time                 0.214105
org_id                        0.052932
invited_by_user_id            0.031788
opted_in_to_mailing_list      0.004325
enabled_for_marketing_drip    0.003989
PERSONAL_PROJECTS             0.003604
GUEST_INVITE                  0.002188
ORG_INVITE                    0.002156
SIGNUP_GOOGLE_AUTH            0.001868
SIGNUP                        0.001571
0.9680555555555556
```