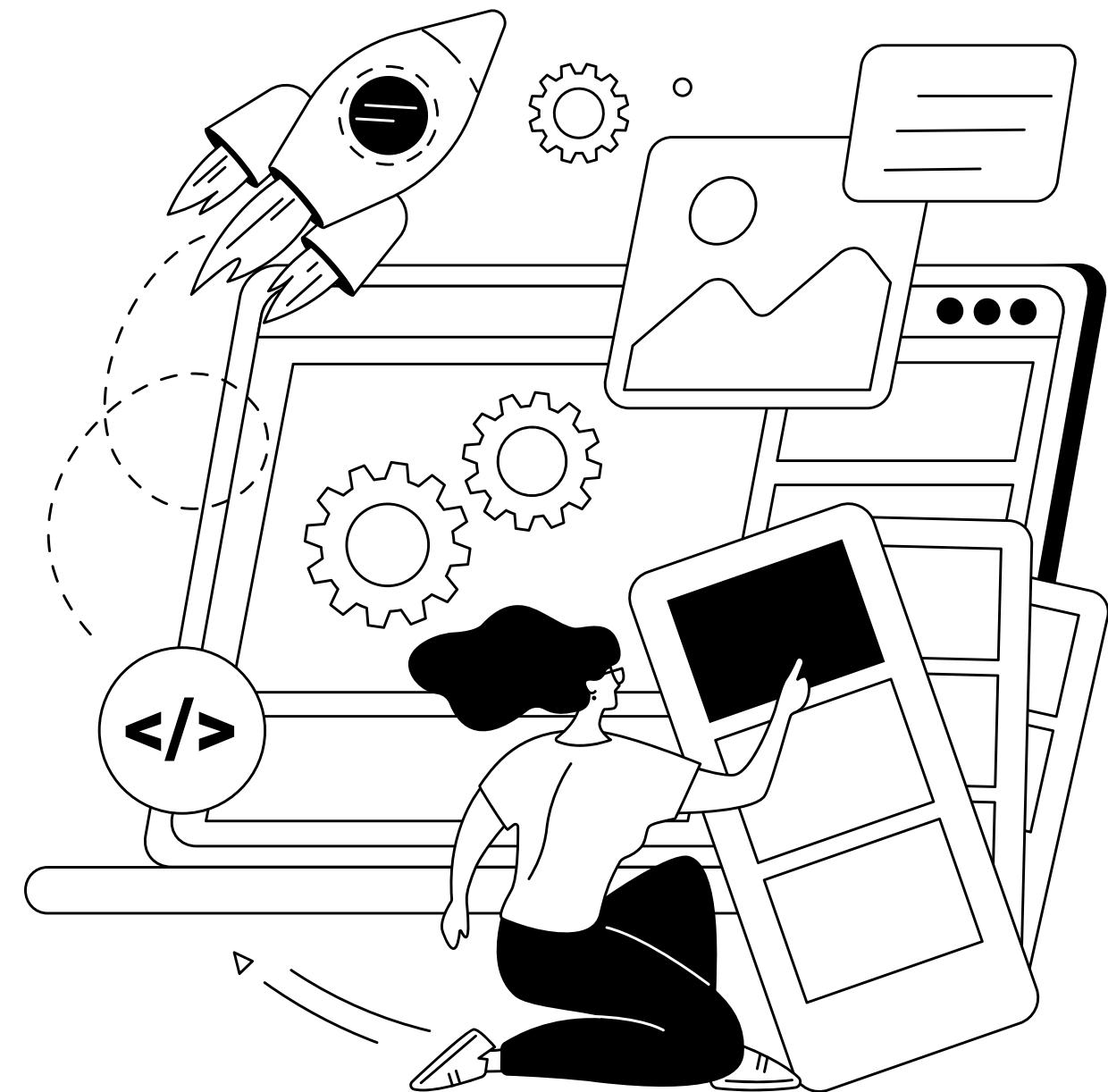


→ SIDANG SKRIPSI



Agung Wahyu Prayogo

{ Codr }

Learn Algorithm Easily



**Clustering Pengguna Untuk
Rekomendasi Pengembangan Fitur
Pada Aplikasi Codr Menggunakan
Metode K-Means**

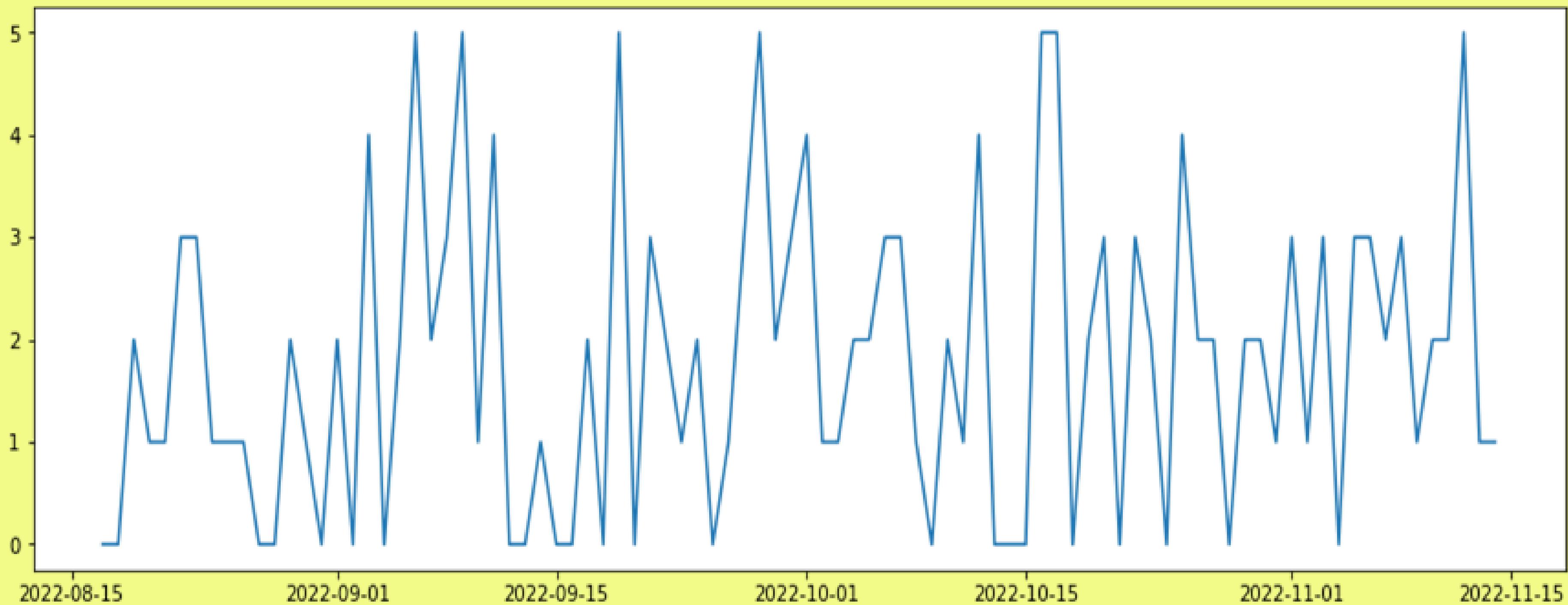
Latar Belakang

Codr adalah aplikasi yang berfokus pada pembelajaran algoritma dan cara kerja pemrograman. Aplikasi ini berbasis iOS yang menyediakan materi interaktif dan mudah dipahami. Aplikasi ini masih terhitung baru dan belum lama launching di AppStore dan masih ada beberapa bagian dari aplikasi yang bisa dikembangkan fitur – fiturnya.



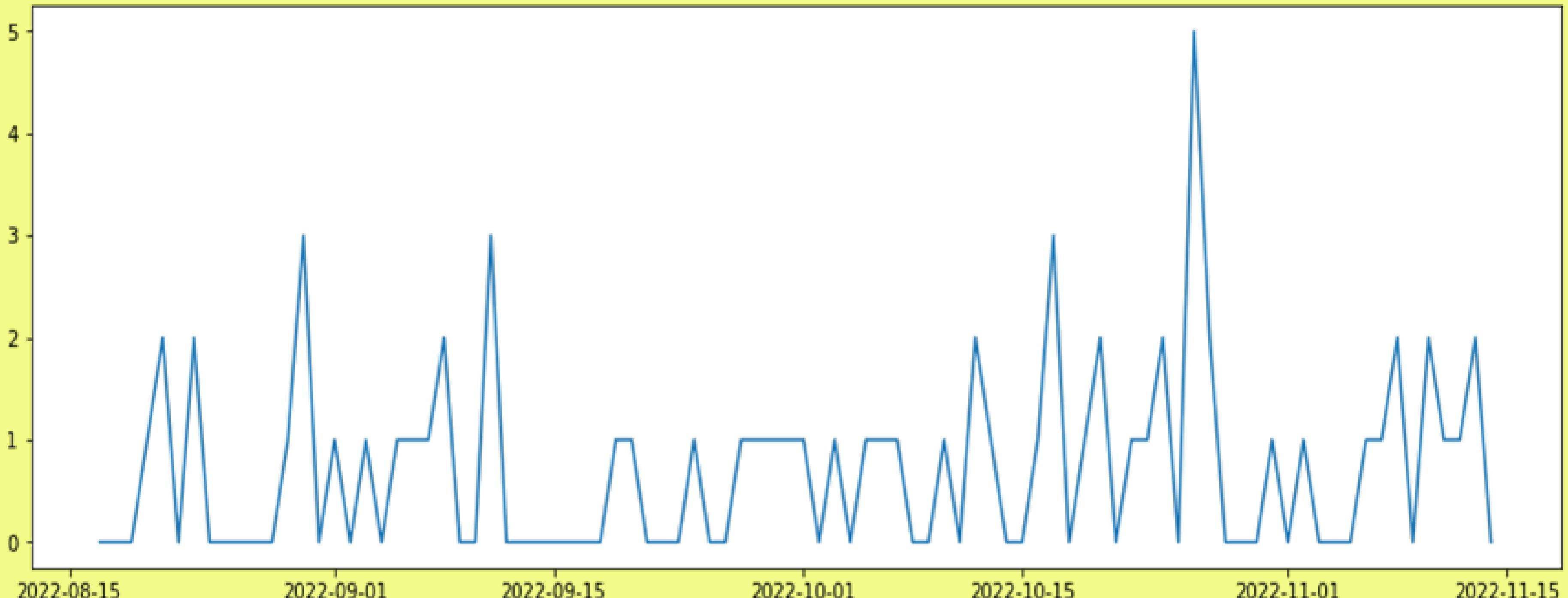
History of New Users

First Time Downloads



History of User Who Reinstall or Switch Device

Installations



Identifikasi Masalah



- ↓ IDENTIFIKASI 1

Belum adanya clustering pengguna aplikasi Codr
- ↓ IDENTIFIKASI 2

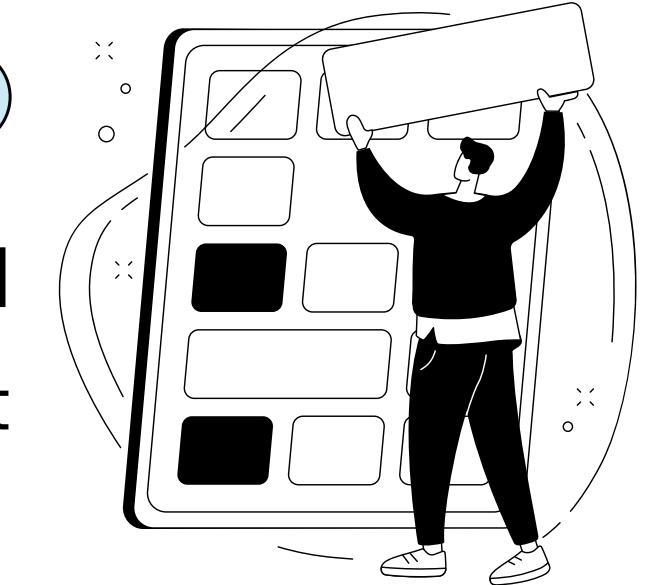
Tidak semua pengguna menggunakan aplikasi dari awal hingga akhir

Rumusan Masalah

Bagaimana implementasi dari metode K-Means dalam clustering pengguna untuk rekomendasi pengembangan fitur pada aplikasi Codr?

STEP 1

What



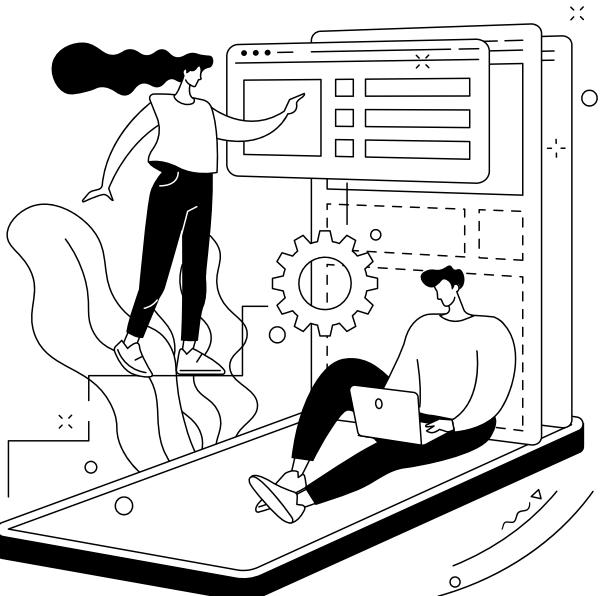
STEP 2

How



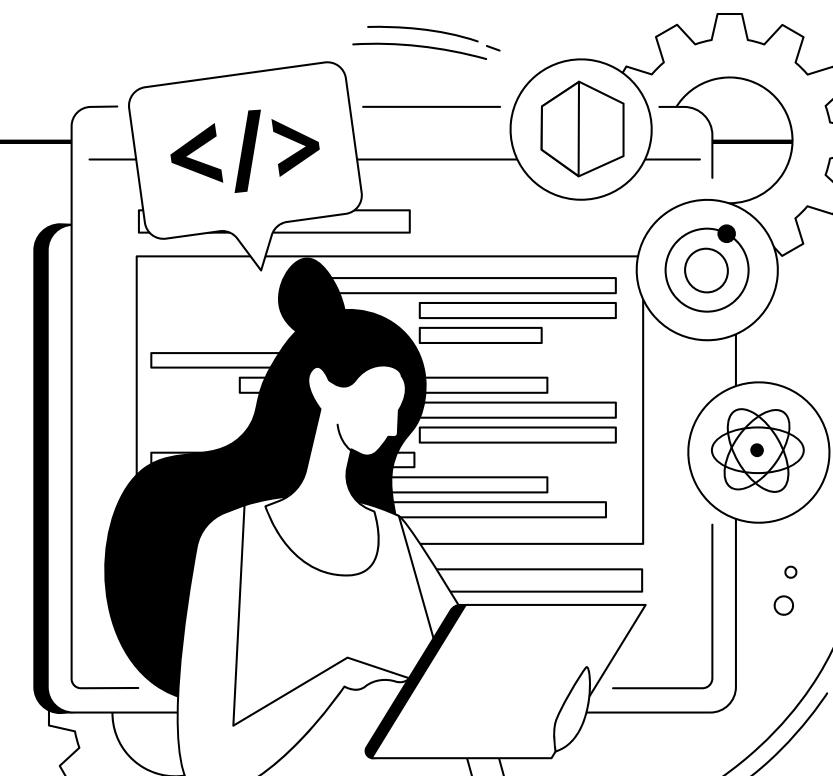
STEP 3

Solvie



Tujuan

Cluster prilaku pengguna dalam menggunakan aplikasi dan memberi rekomendasi kepada tim pengembang berdasarkan cluster yang ditemukan



MANFAAT 1

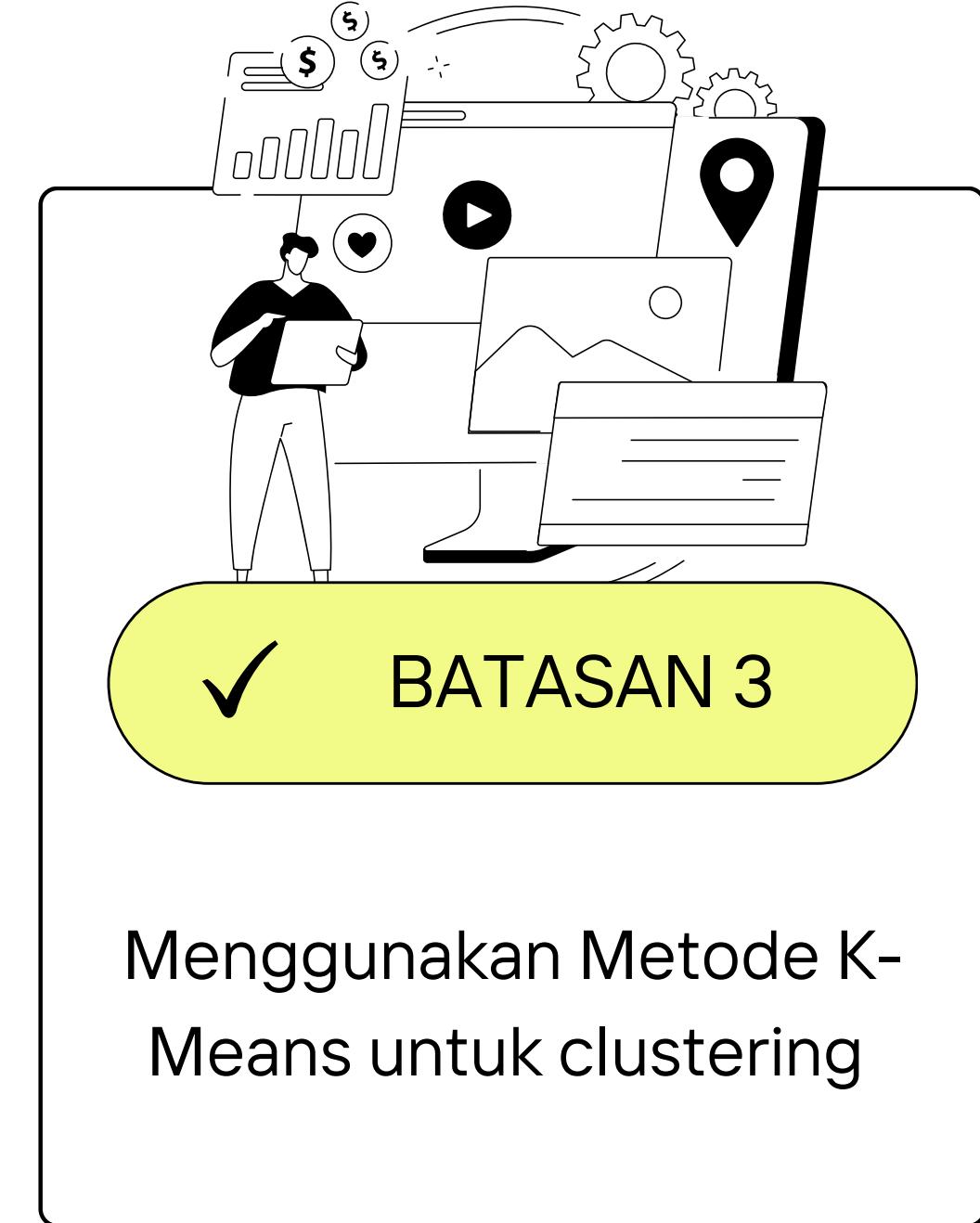
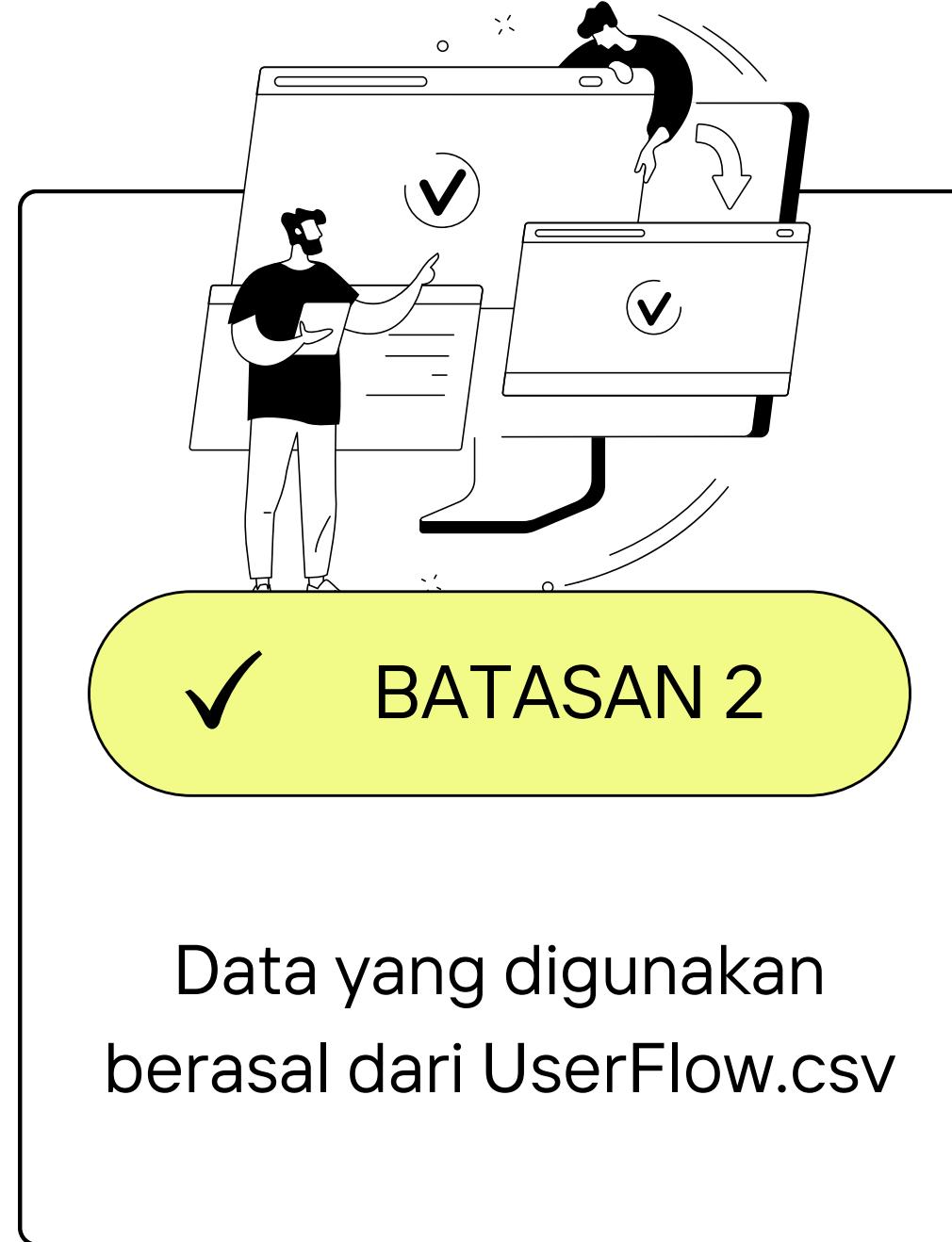
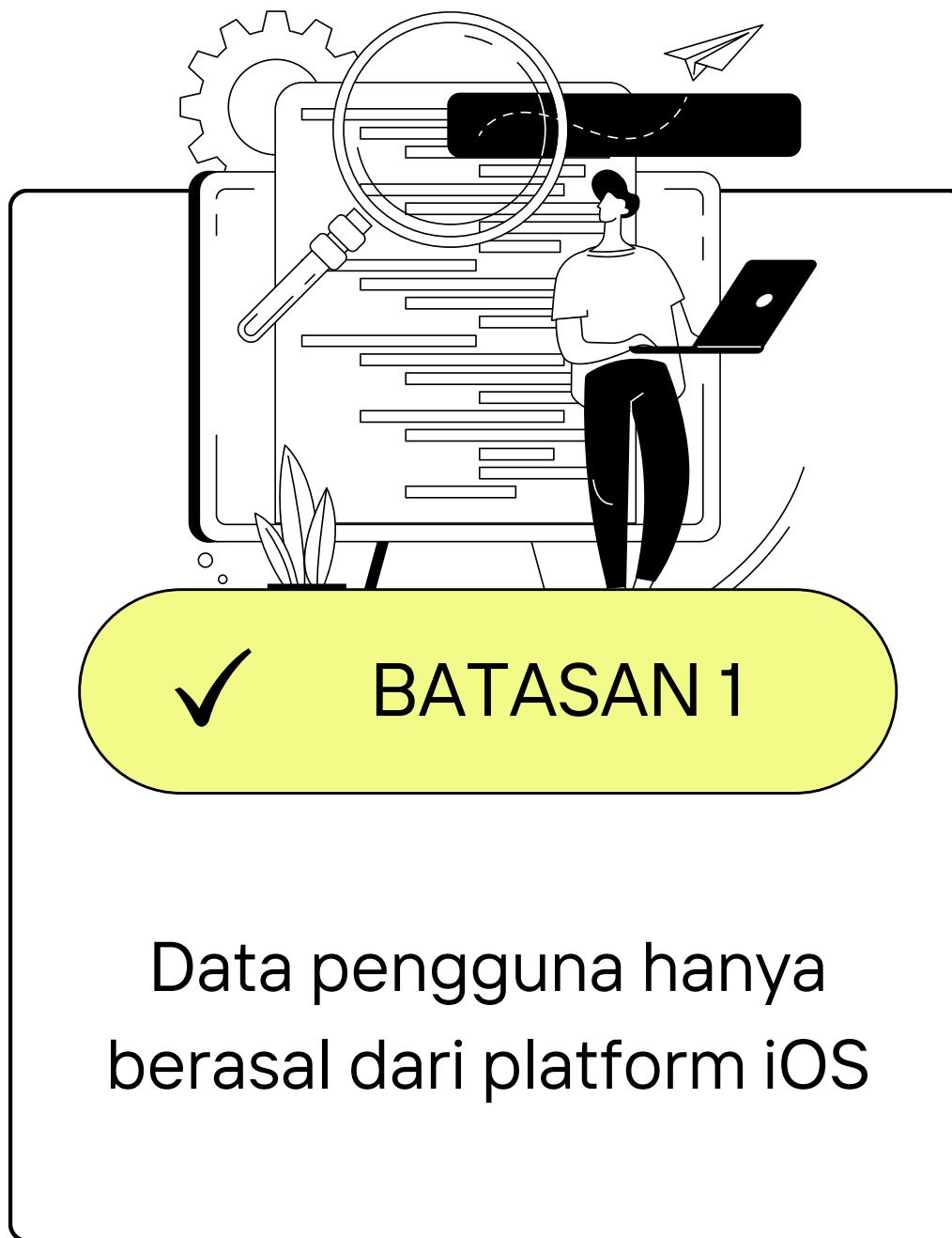
Pengembang aplikasi bisa mengembangkan fitur – fitur berdasarkan clustering pengguna yang ditemukan

MANFAAT 2

Meningkatkan tingkat kepuasan dan keterlibatan pengguna dengan menyediakan fitur-fitur yang lebih relevan dan menarik

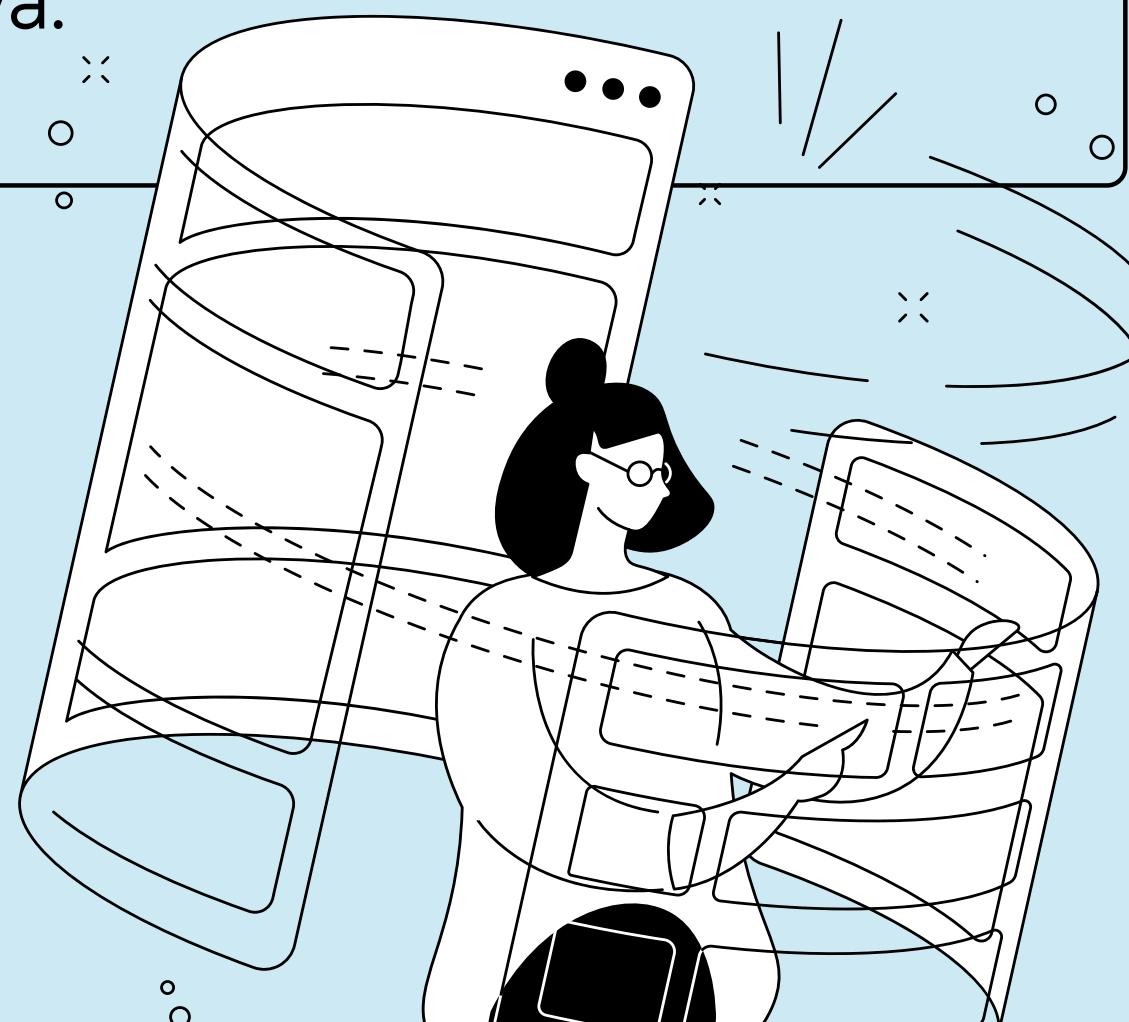
Batasan Masalah

hal - hal yang perlu diperhatikan, antara lain :



K-Means

K-Means adalah algoritma pengelompokan dalam analisis data yang digunakan untuk mengelompokkan data menjadi beberapa kelompok berdasarkan kesamaan karakteristiknya.



$$\mathcal{L} = \sum_{j=1}^k \sum_{i=1}^n \|x_i - \mu_j\|^2$$

\mathcal{L} = banyak *Cluster*

x_i = Titik data ke-i

μ_j = Titik pusat (*centroid*) *cluster* j

$\|x_i - \mu_j\|^2$ = Jarak Euclidean kuadrat antara titik data x_i dengan titik pusat *cluster* μ_j

$$\mu_j = \frac{1}{n_j} \sum_{i=j} x_i$$

μ_j = *Centroid* baru dari *cluster* j

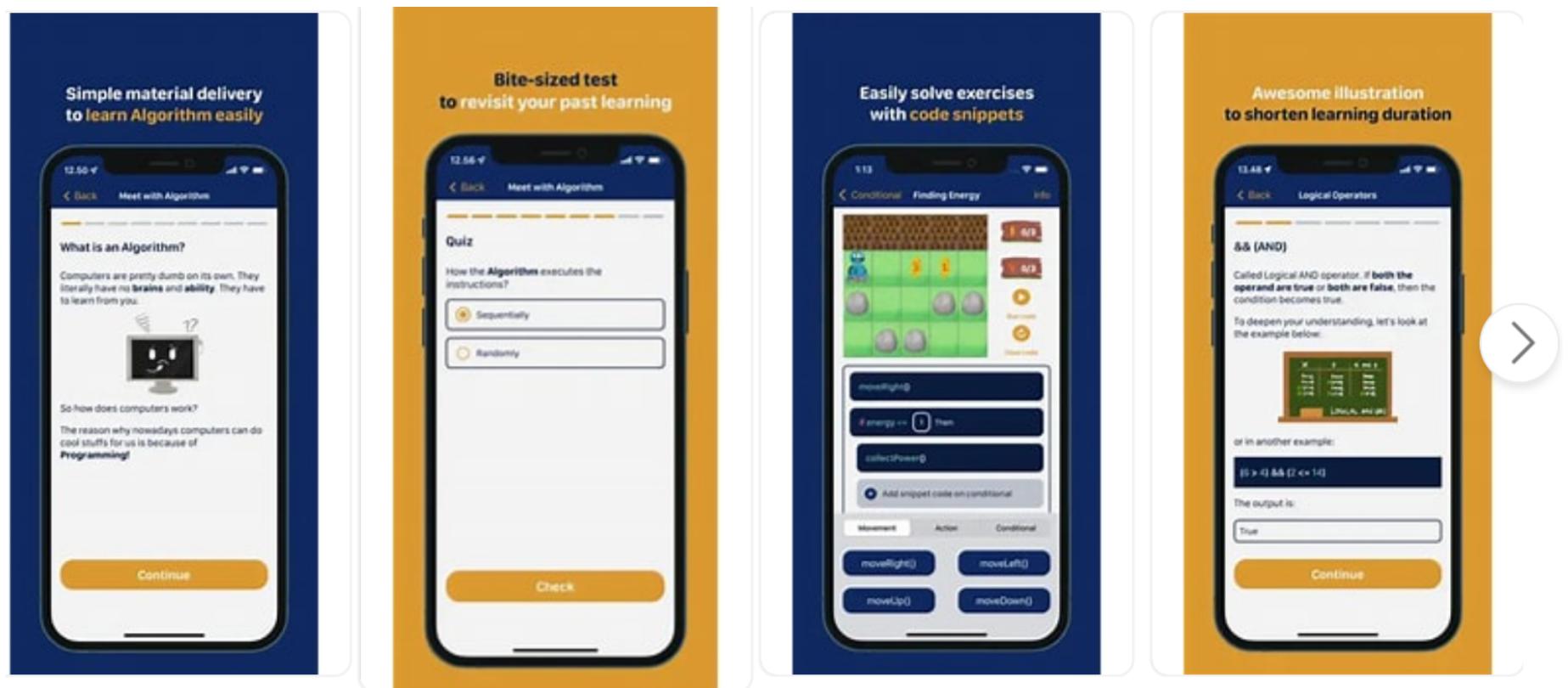
n_j = Jumlah titik data yang didistribusikan ke *cluster* j

$\sum x_i$ = Penjumlahan dari semua titik data x_i yang di distribusikan ke cluster j

Object Penelitian

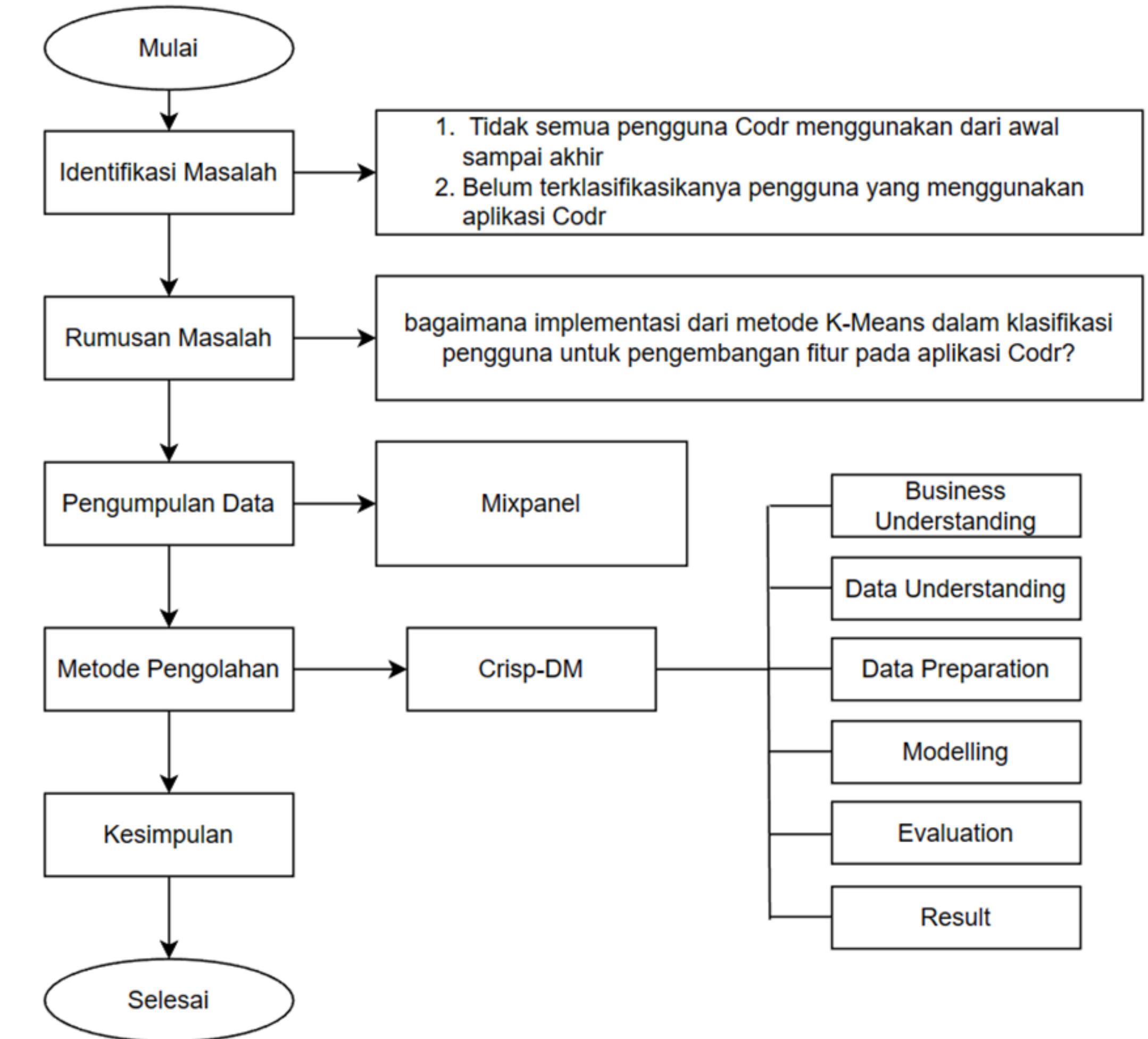
Codr. : Learn Algoritm Easily

Codr. adalah aplikasi yang membantu pemrogram pemula untuk mempelajari konsep algoritm dengan mudah. Codr membantu dengan memberikan materi tentang konsep algoritma dengan bahasa yang mudah dipahami disertai dengan ilustrasi yang sesuai

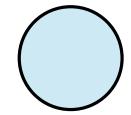


Industri : Penyedia Jasa Pembelajaran Online
Kantor Pusat : Batam, Kepulauan Riau
Tahun Berdiri : 2022
Spesialisasi : Algorithm Challenges, E-Learning
Kantor Pusat : Nongsa Digital Park, Batam, Riau

Kerangka Penelitian

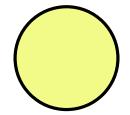


Method



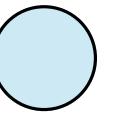
STEP 1

Business
Understanding



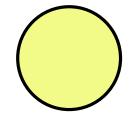
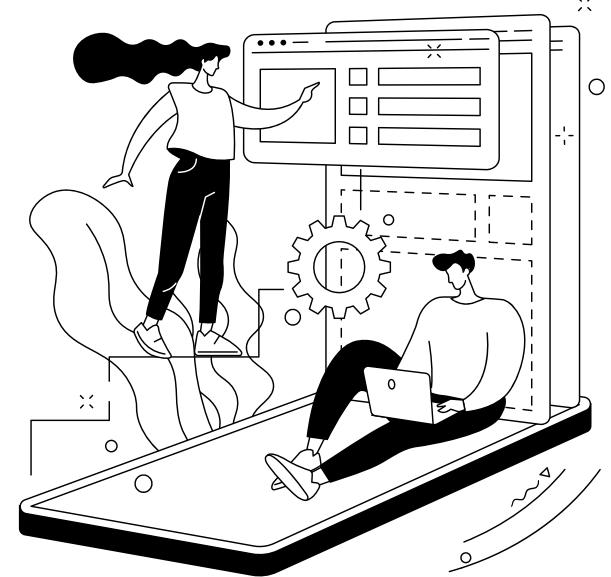
STEP 2

Data
Understanding



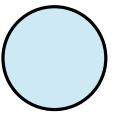
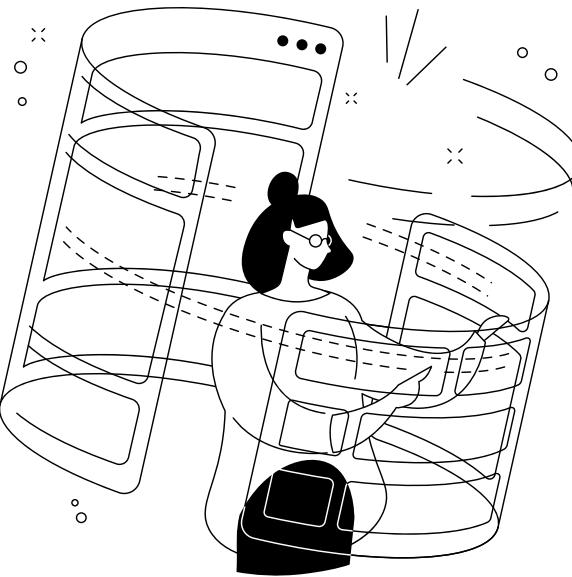
STEP 3

Data
Preparation



STEP 4

Modeling

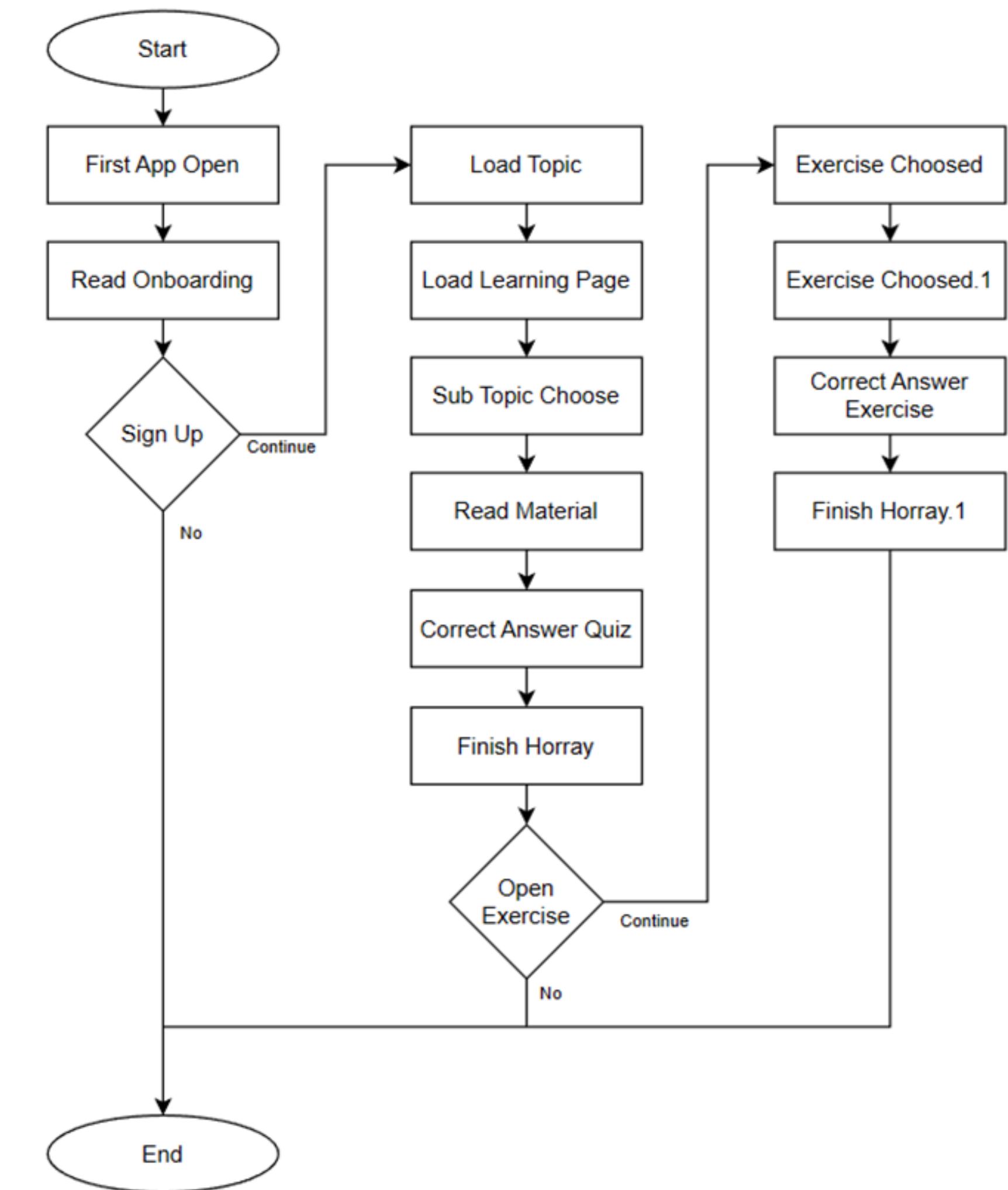


STEP 5

Result



Business Understanding



Data Understanding



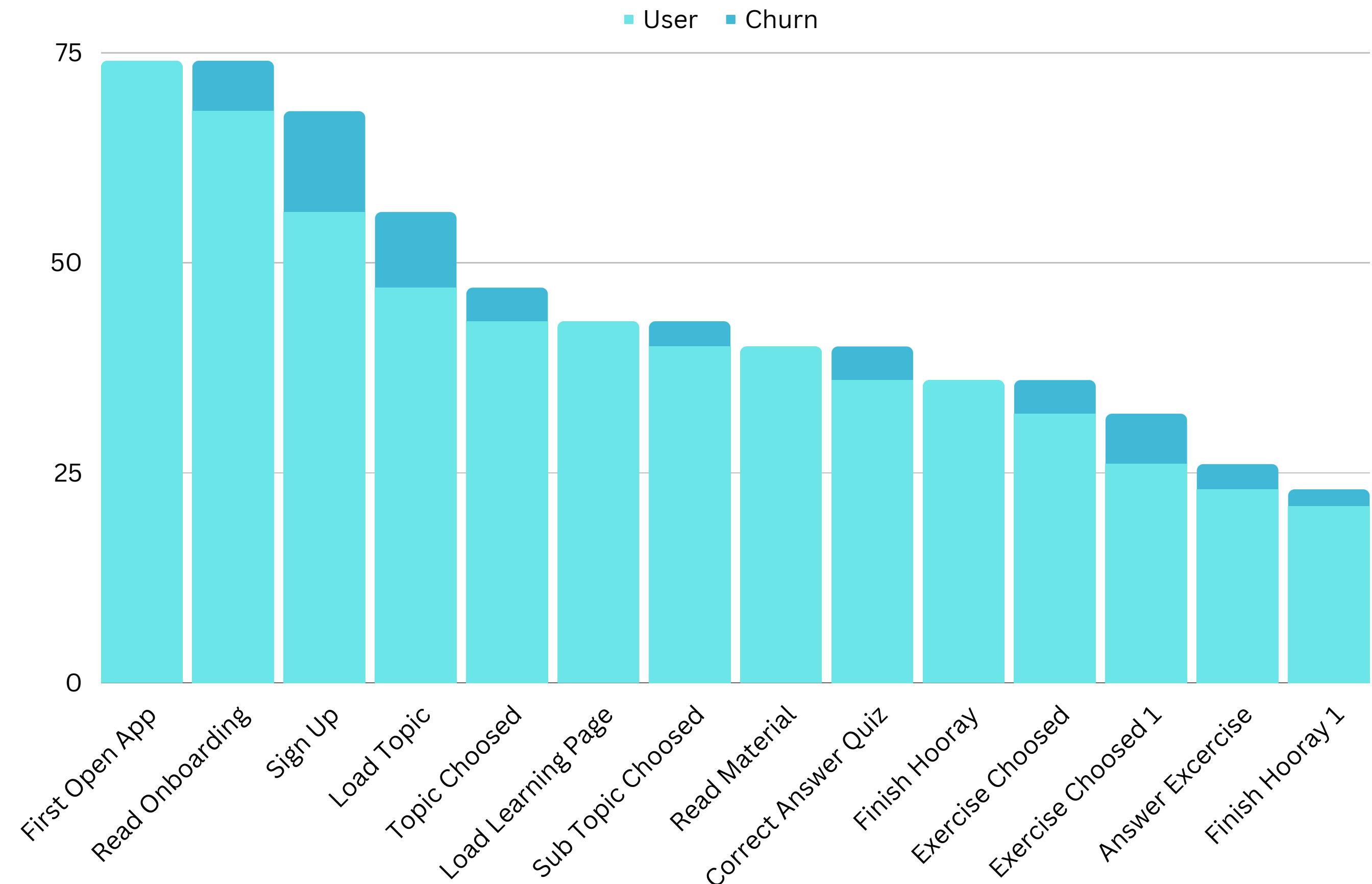
Source Data

- Data didapat dari pengembang aplikasi Codr yang menggunakan tools Mixpanel.
- Tanggal pada data UserFlow.csv dimulai dari 26 April hingga 27 November
- Data berisi 74 baris dan 15 kolom berukuran 8.8 kb (kilo byte)

Data Dictionary

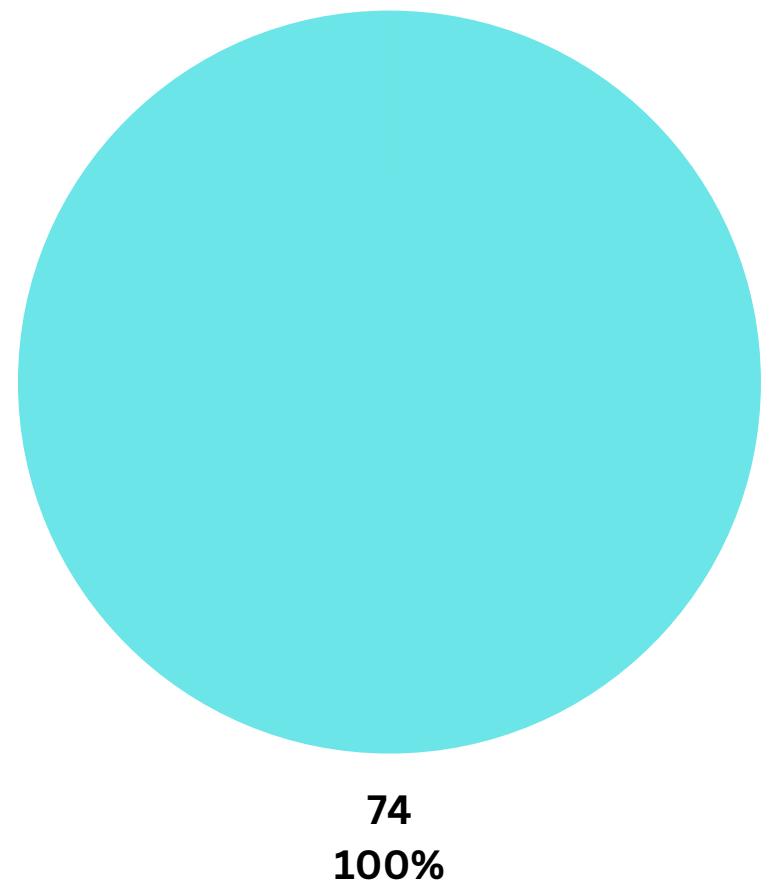
- UserId : ID pengguna
- First App Open : membuka aplikasi? (1:Ya, 0:Tidak)
- Read Onboarding : membaca orientasi setelah membuka Aplikasi? (1:Ya, 0:Tidak)
- Sign Up : Sign Up? (1:Ya, 0:Tidak)
- Load Topic : Memuat topik? (1:Ya, 0:Tidak)
- Topic Choosed : Memilih topik? (1:Ya, 0:Tidak)
- Load Learning Page : Memuat Halaman Pembelajaran? (1:Ya, 0:Tidak)
- Sub Topic Choosed : Memilih sub topik? (1:Ya, 0:Tidak)
- Read Material : Membaca materi? (1:Ya, 0:Tidak)
- Correct Answer Quiz : Menjawab kuis dengan benar? (1:Ya, 0:Tidak)
- Finish Hooray: Baru menjadi 1 jika pengguna berhasil menjawab kuis
- Exercise Choosed : Melakukan latihan? (1:Ya, 0:Tidak)
- Exercise Choosed.1 : Memilih latihan lain? (1:Ya, 0:Tidak)
- Correct Answer Exercise : Benar dalam mengerjakan latihan? (1:Ya, 0:Tidak)
- Finish Hooray.1 : Baru menjadi 1 jika pengguna berhasil mengerjakan latihan

Dataset User Flow.csv

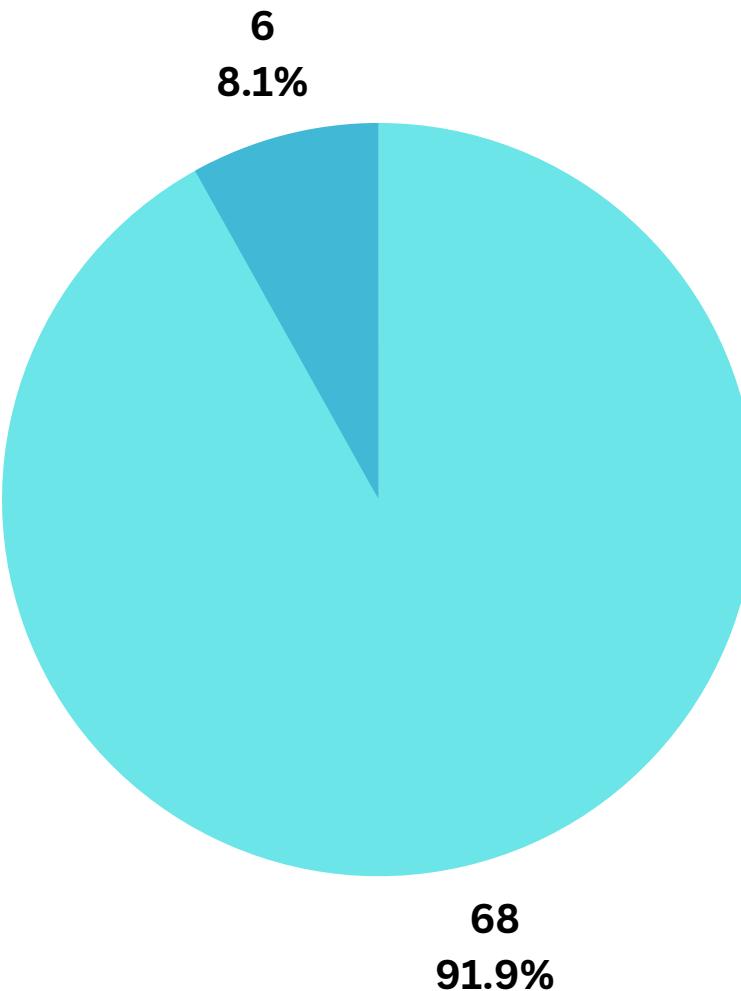


EXPLORATORY DATA ANALYSIS

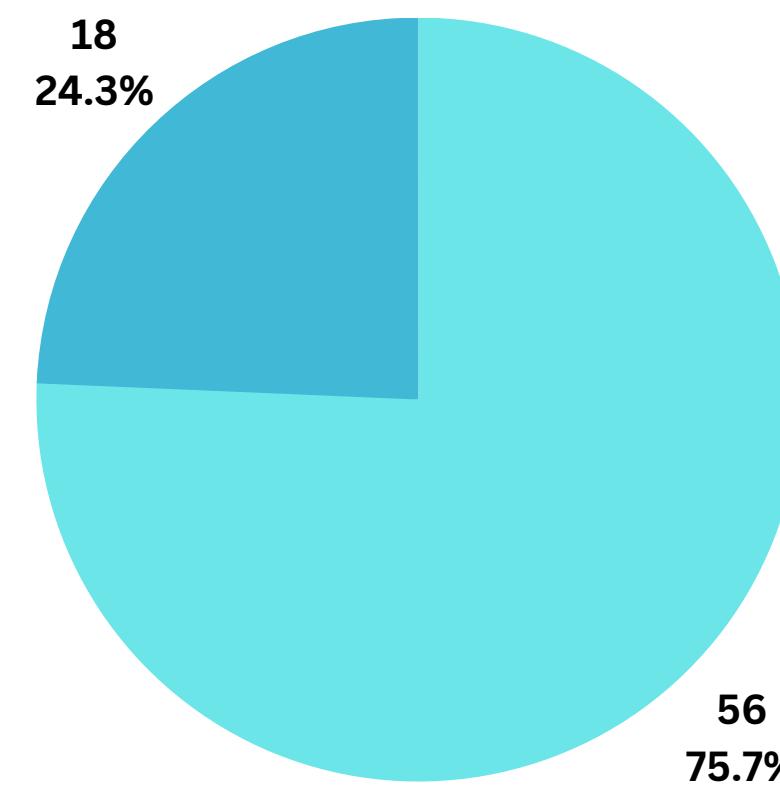
FIRST APP OPEN



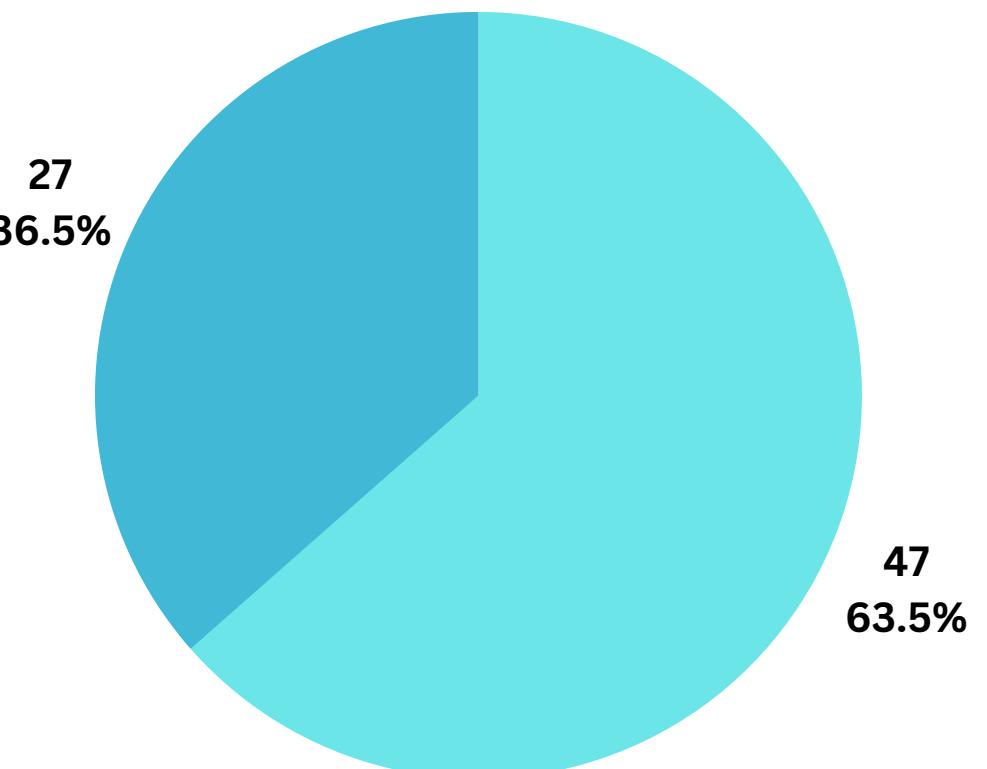
READ ONBOARDING



SIGN UP

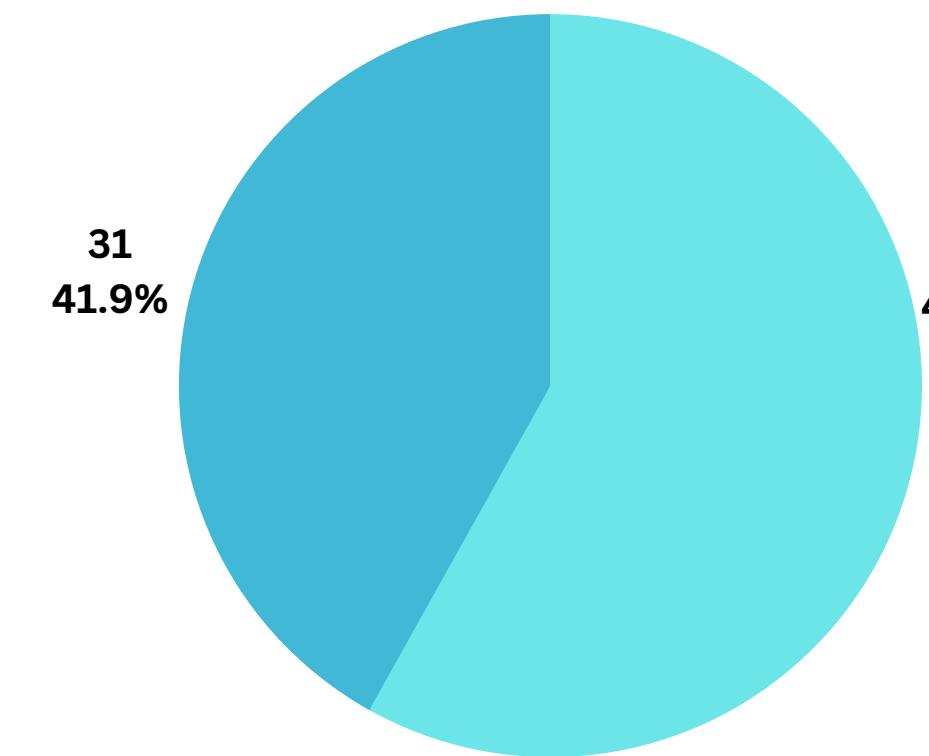


LOAD TOPIC

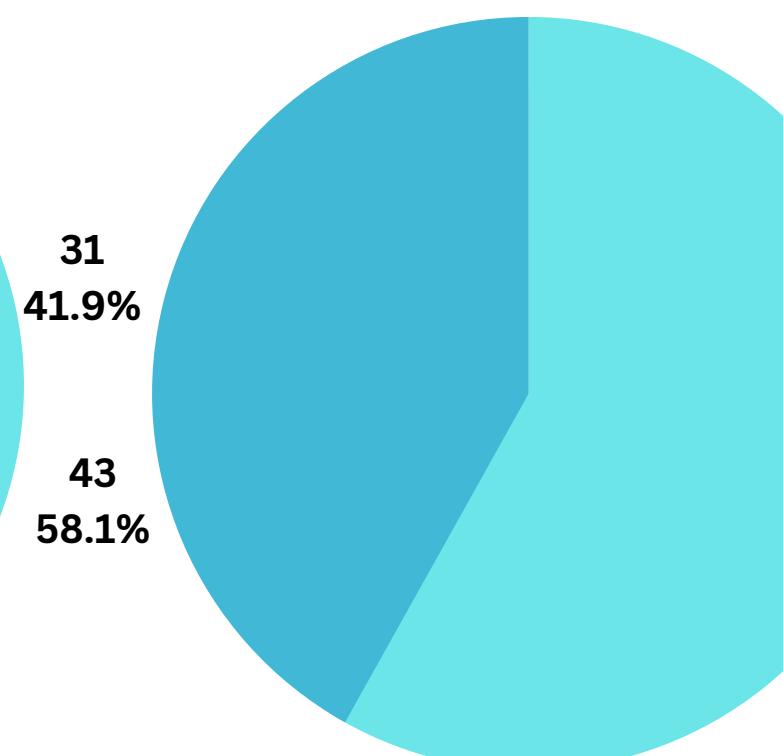


EXPLORATORY DATA ANALYSIS

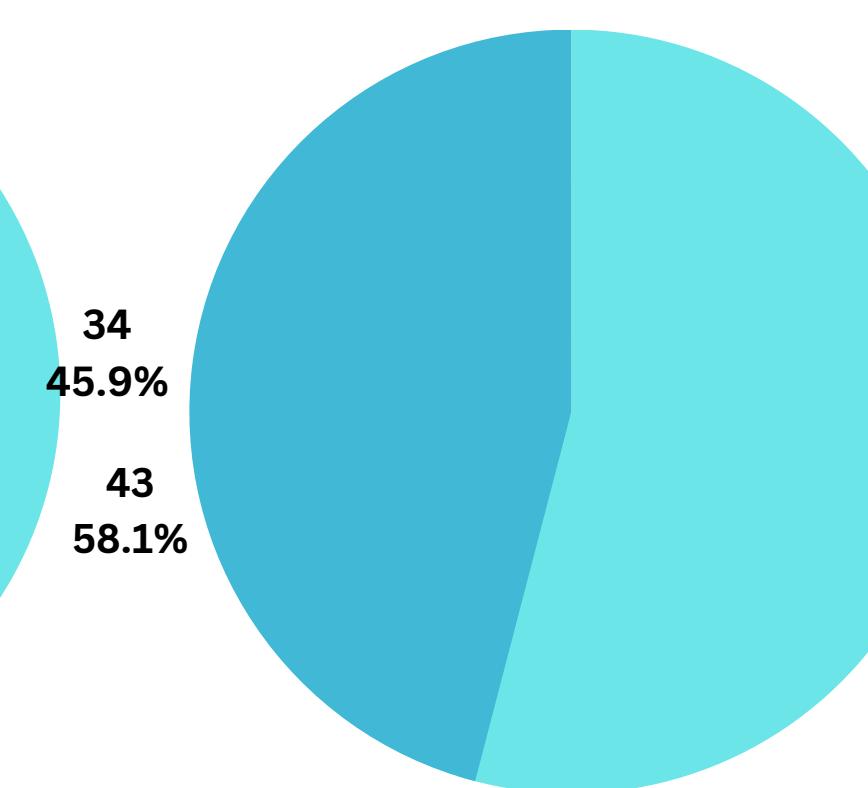
TOPIC CHOOSED



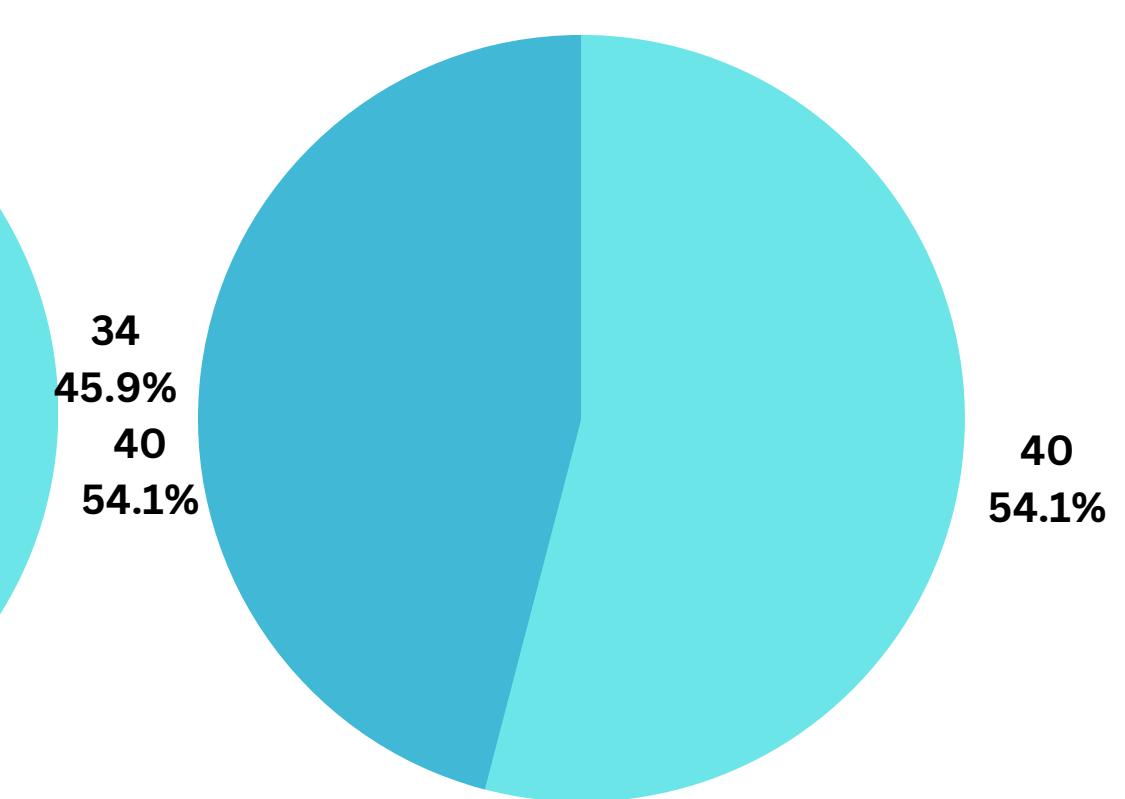
LOAD LEARNING PAGE



SUB TOPIC CHOOSED

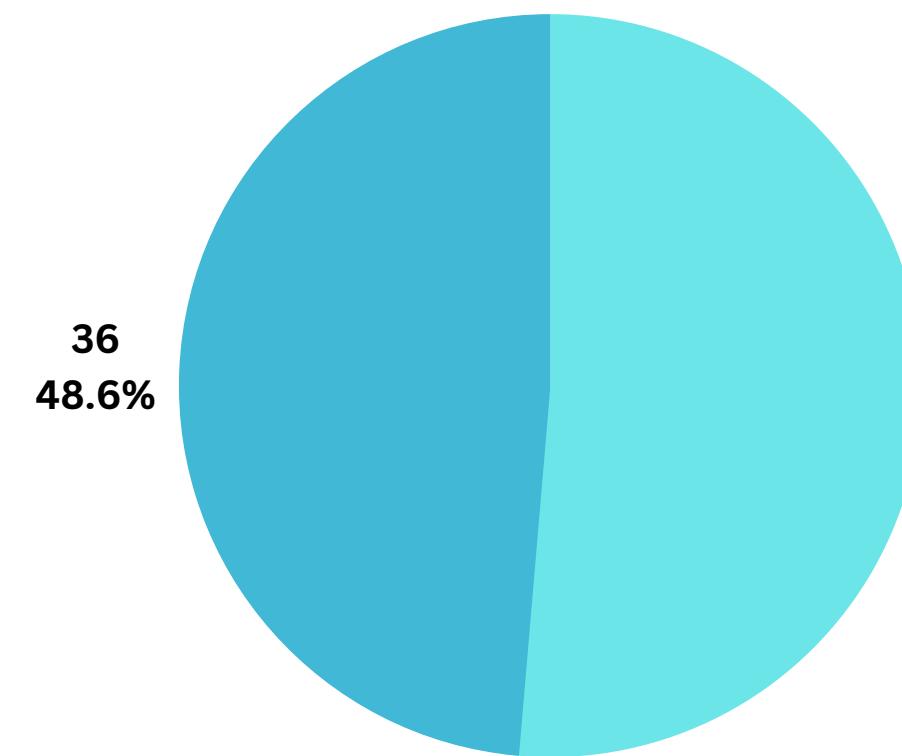


READ MATERIAL

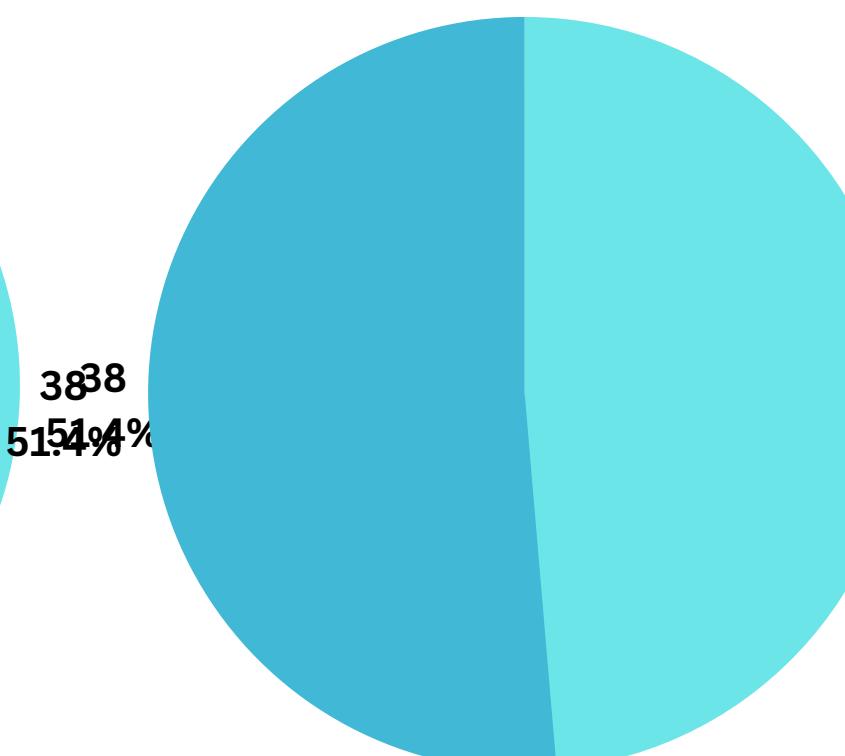


EXPLORATORY DATA ANALYSIS

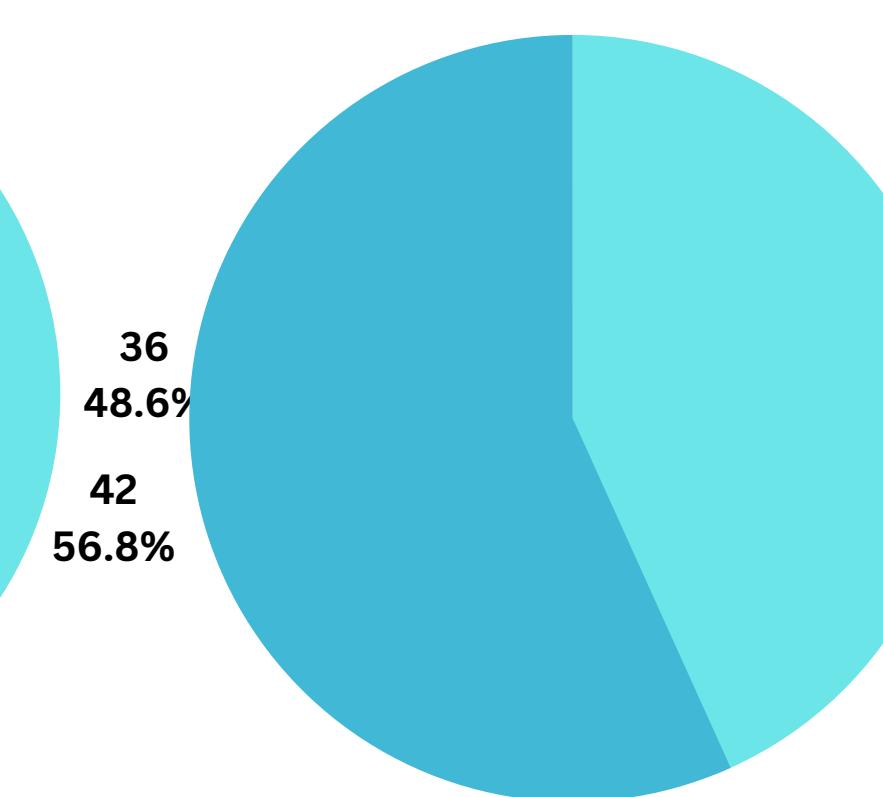
CORRECT ANSWER QUIS



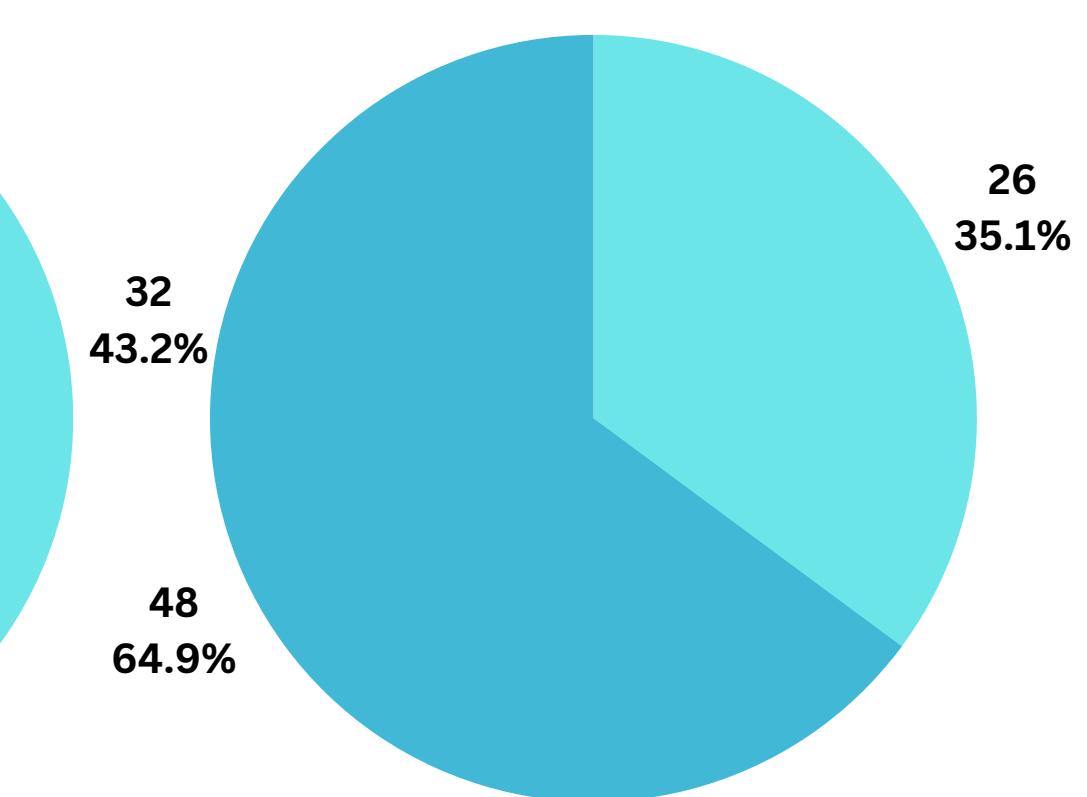
FINISH HOORAY



EXERCISE CHOOSED

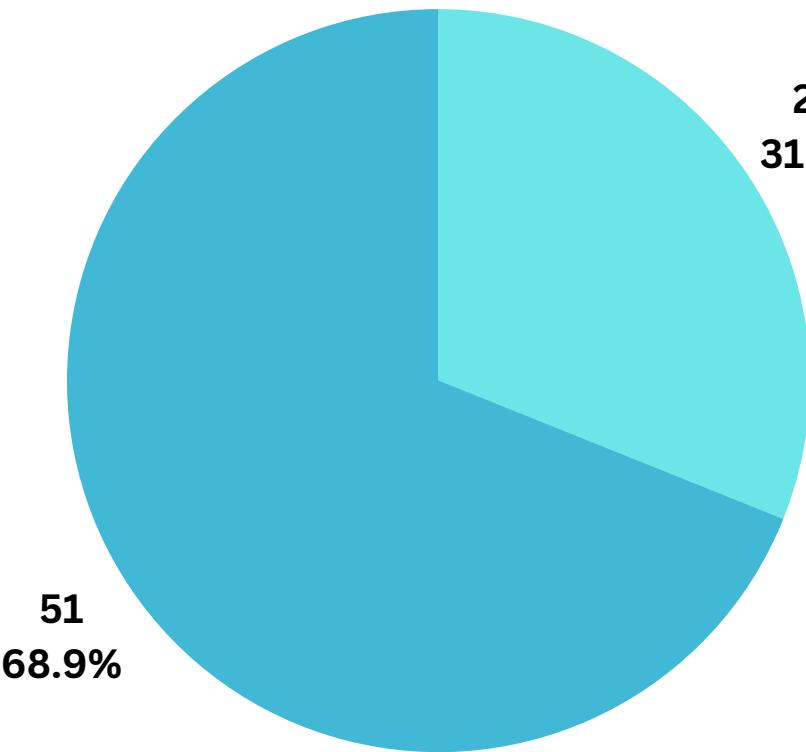


EXERCISE CHOOSED.1

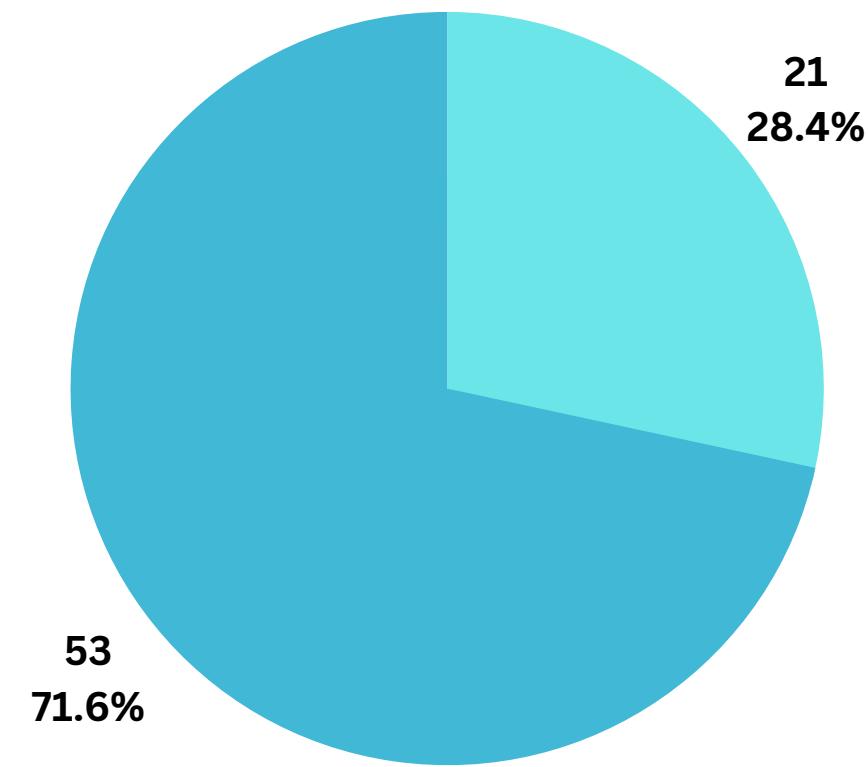


EXPLORATORY DATA ANALYSIS

CORRECT ANSWER AXERCISE

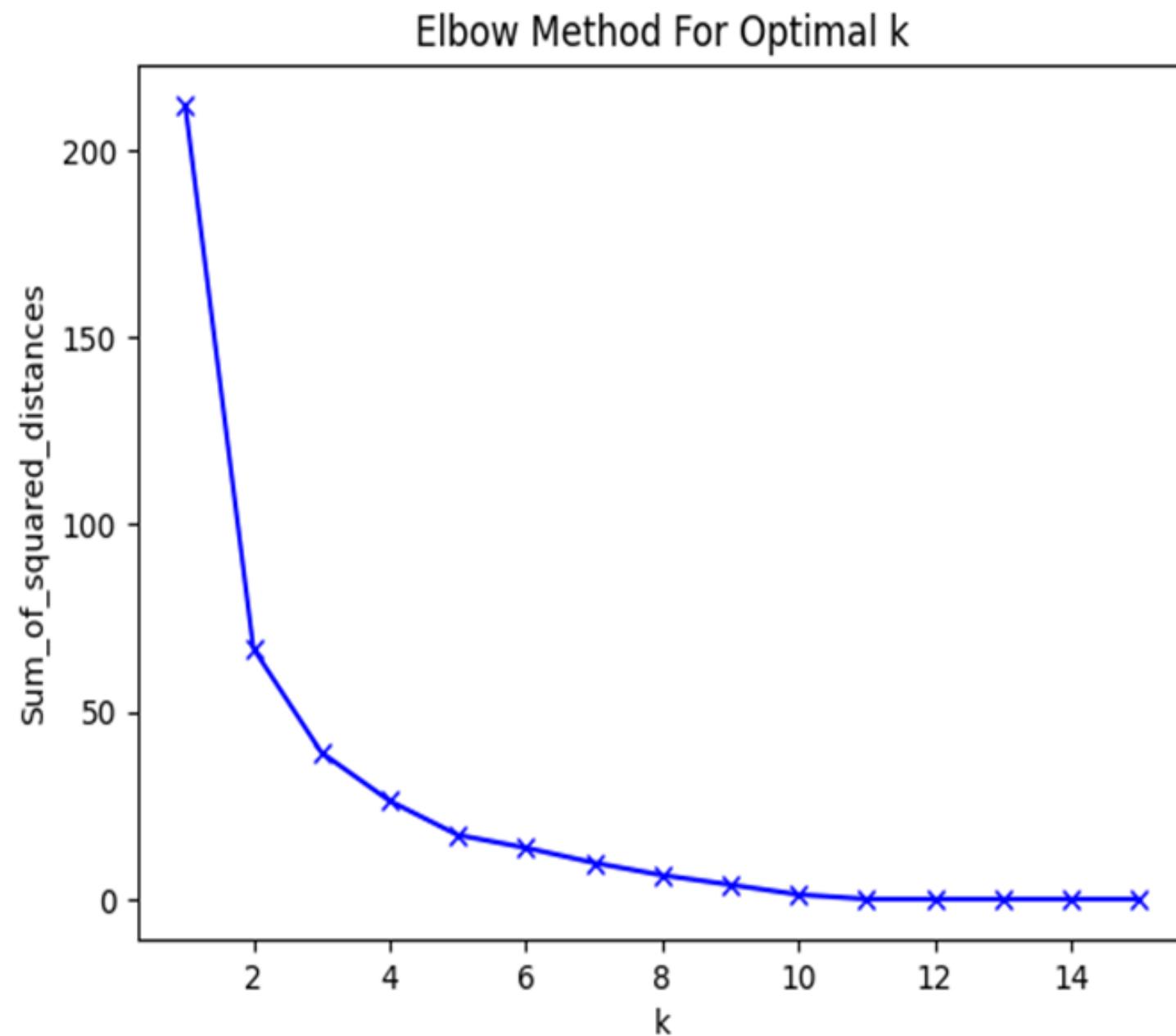


FINISH HOORAY



PREPROCESSING MODELLING

ELBOW METHOD



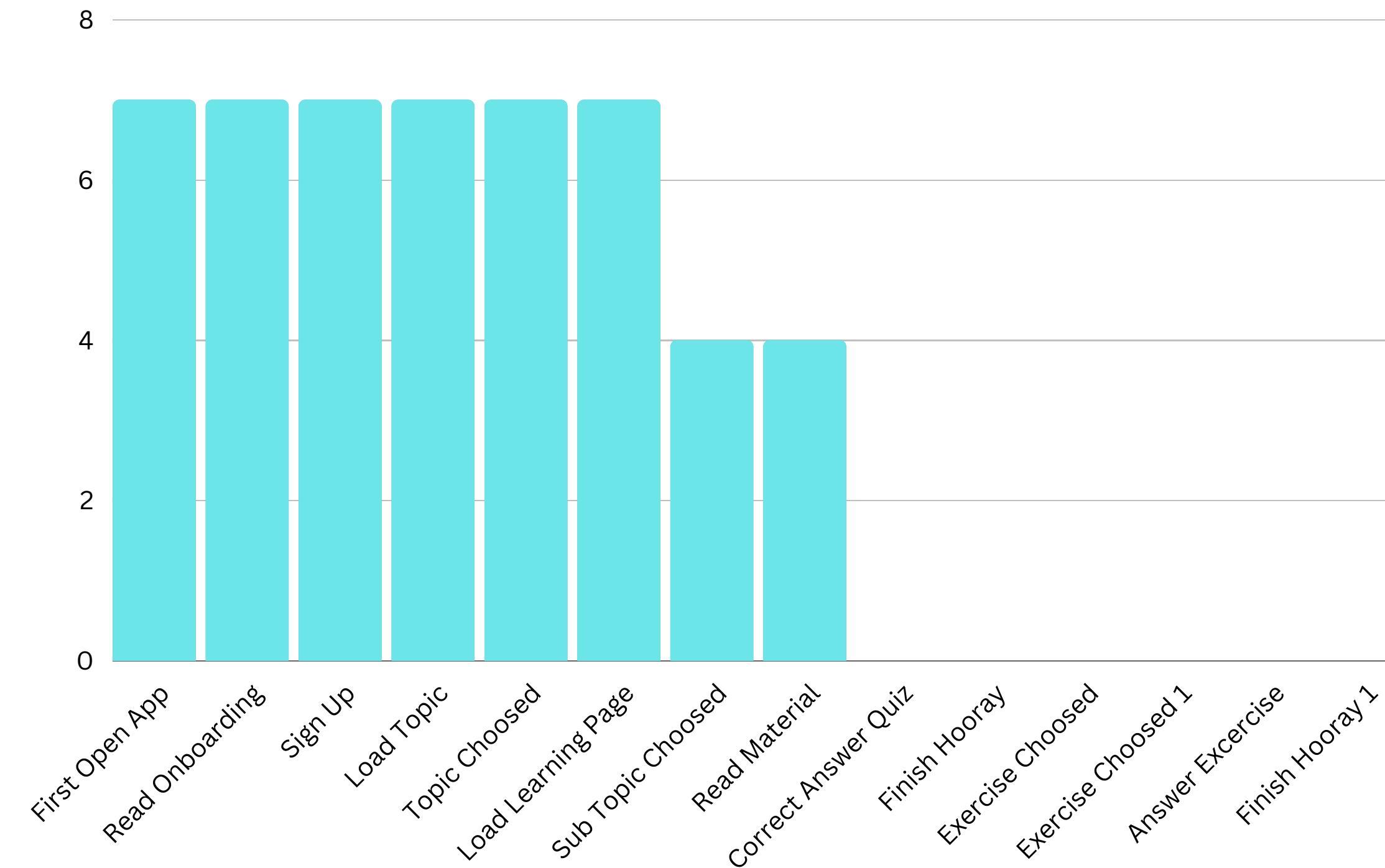
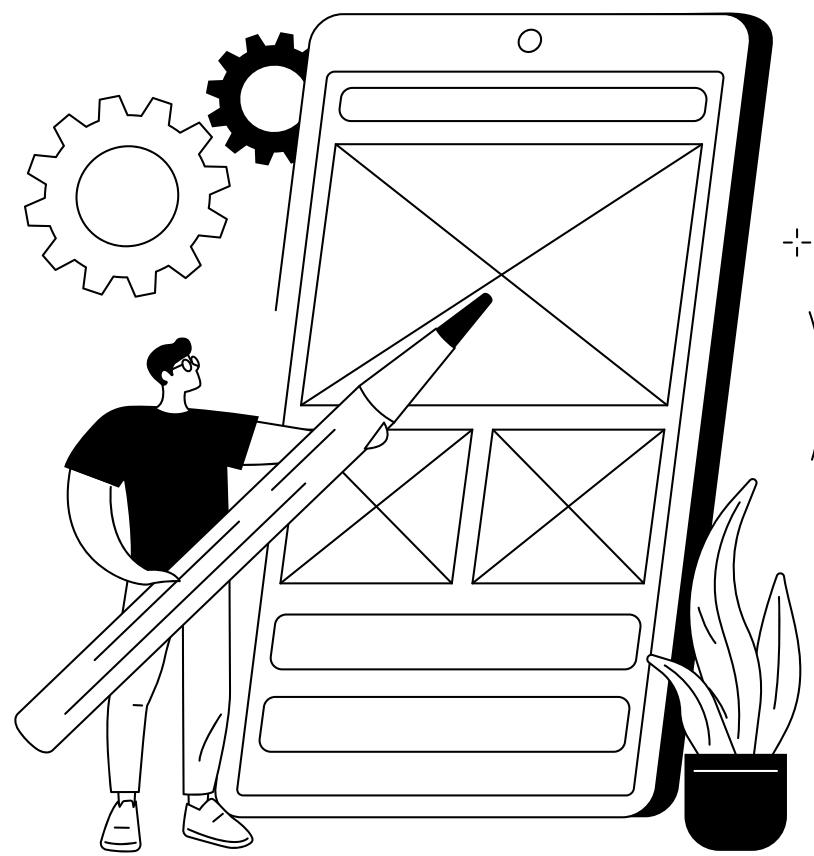
DAVIES BOULDING INDEX

k	DBI
2	0.62822087256
3	0.6323288735305187
4	0.6726540687559202
5	0.7138906512282117
6	0.7138906512282117

Clustering

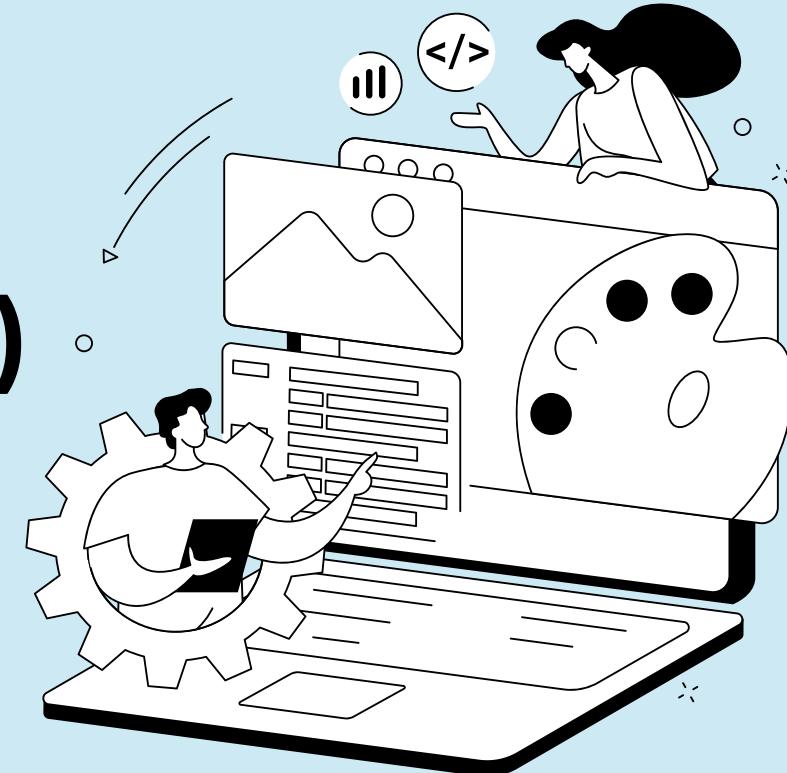
CLUSTER 0

7 User



Recommendation.

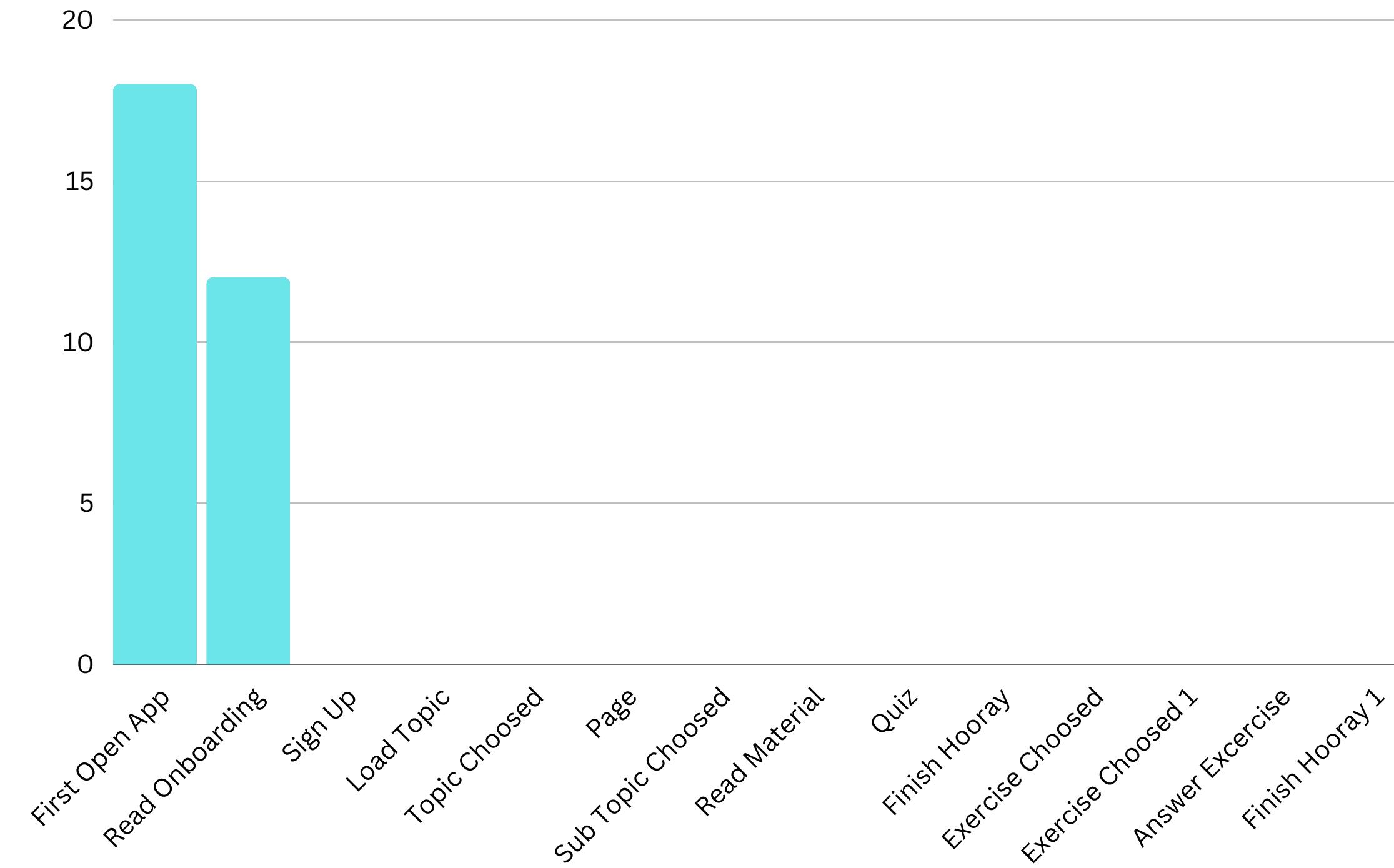
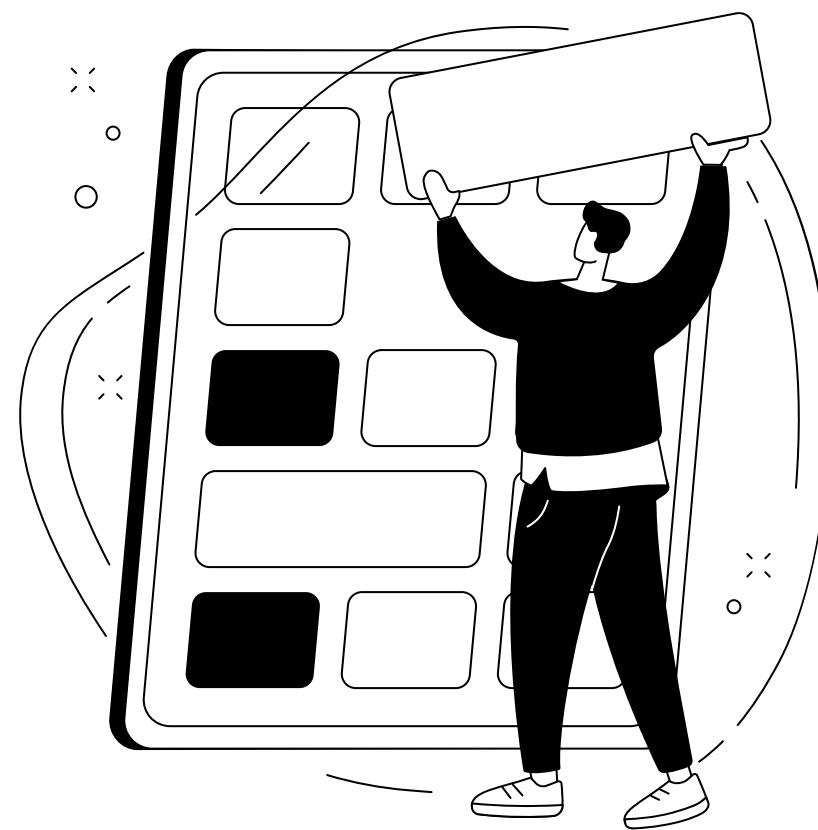
- Achievements
- Currency (coins, diamonds)



Clustering

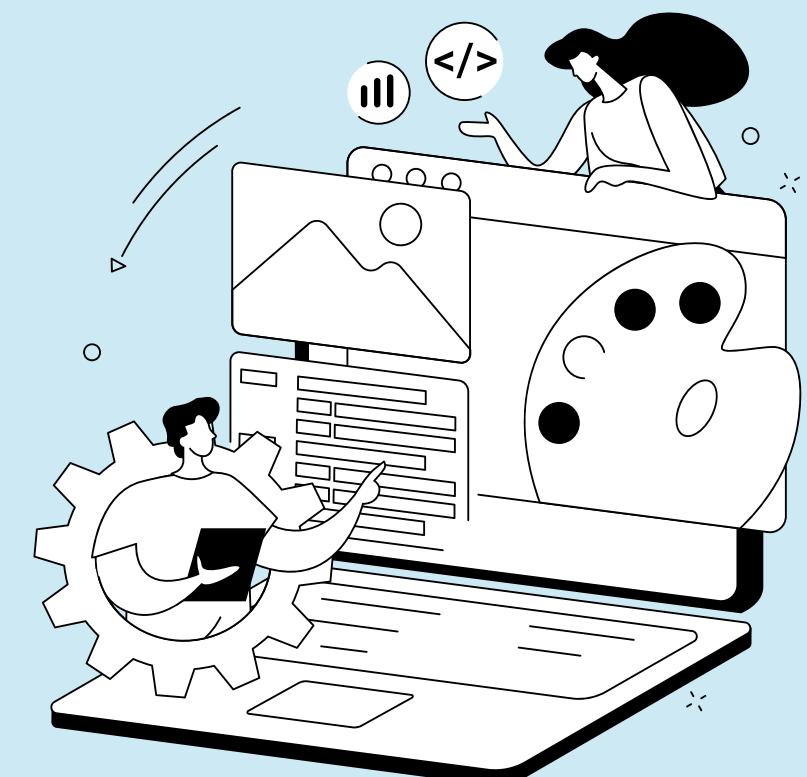
CLUSTER 1

18 User



Recommendation.

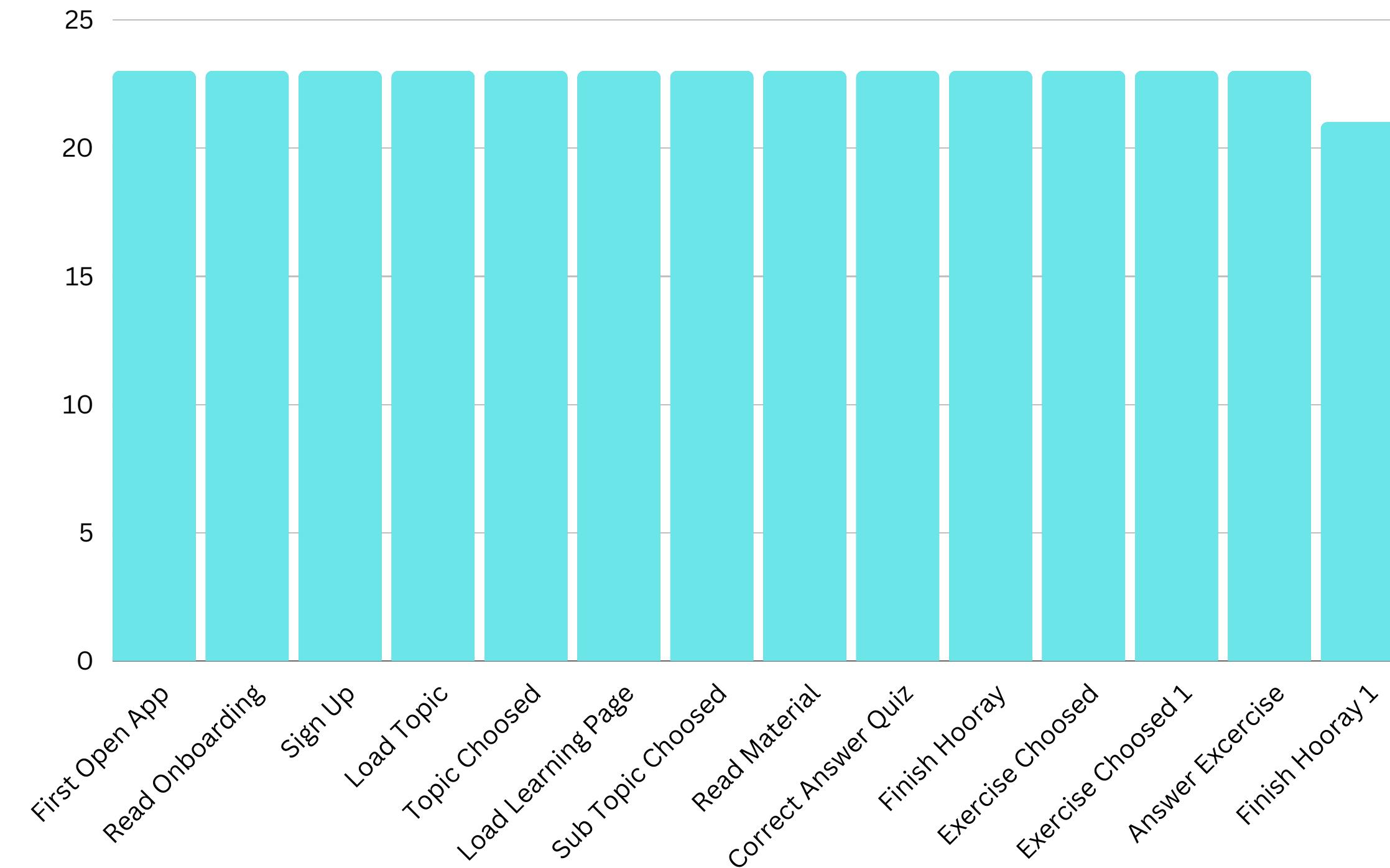
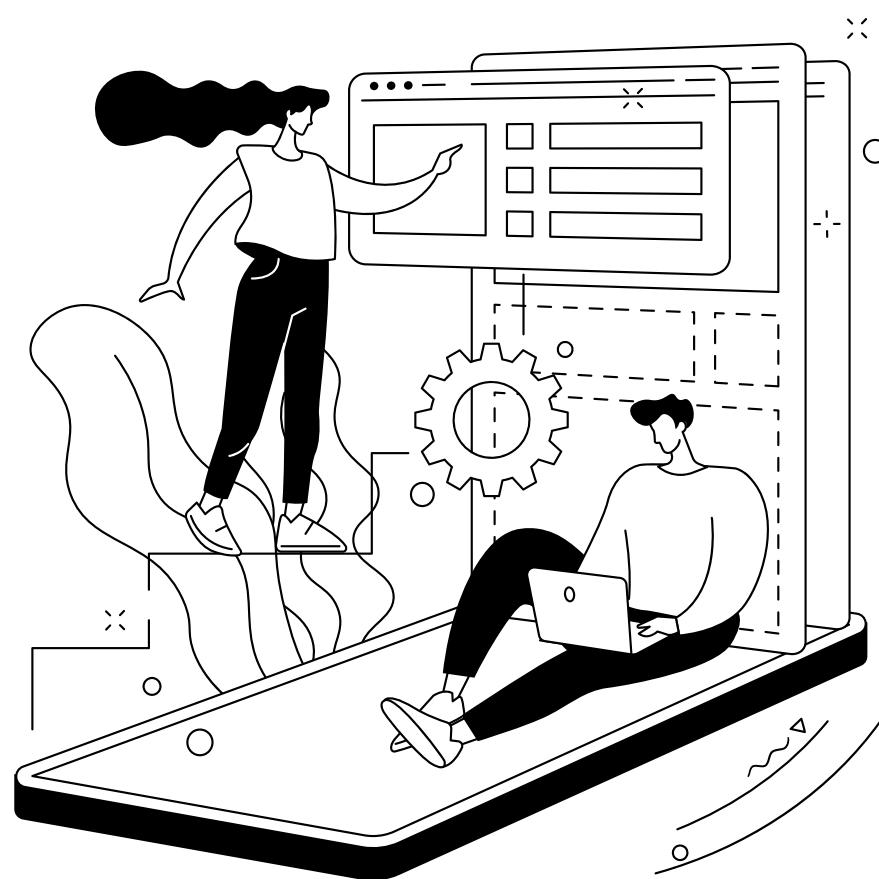
Fitur bahasa Indonesia



Clustering

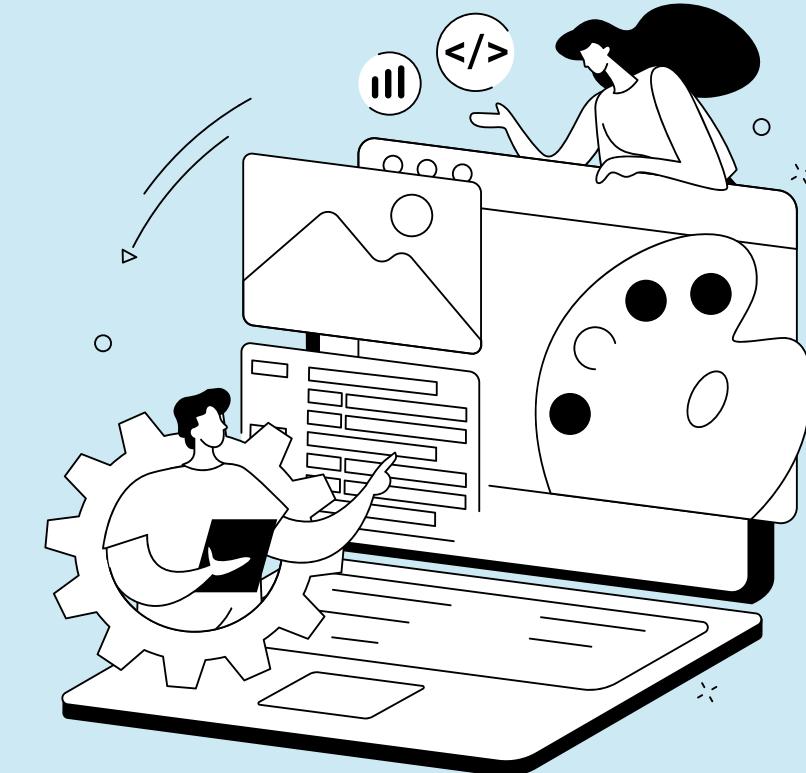
CLUSTER 2

23 User



Recommendation.

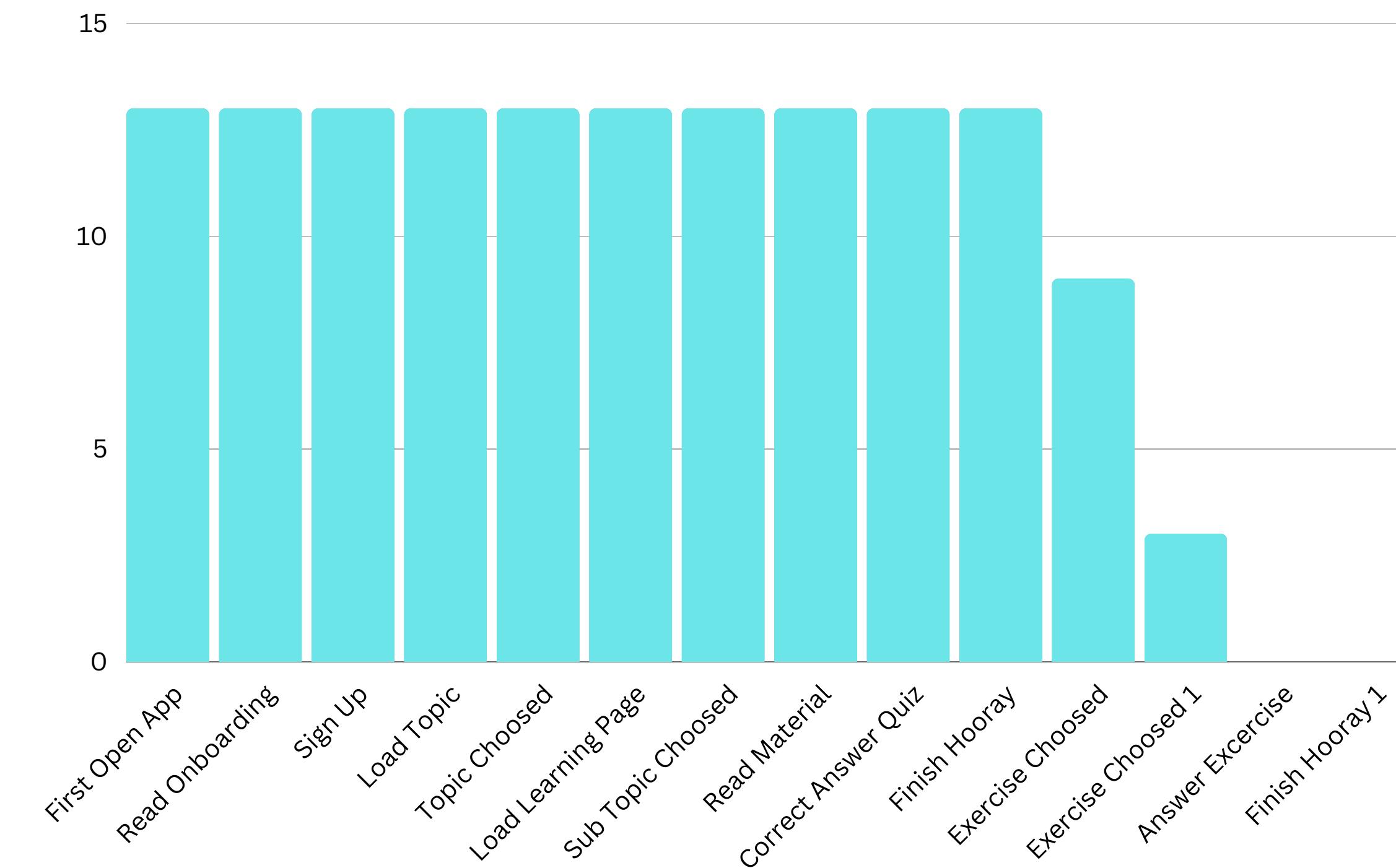
- Material review
- Playgrounds
- Certificate



Clustering

CLUSTER 3

13 User



Recommendation.

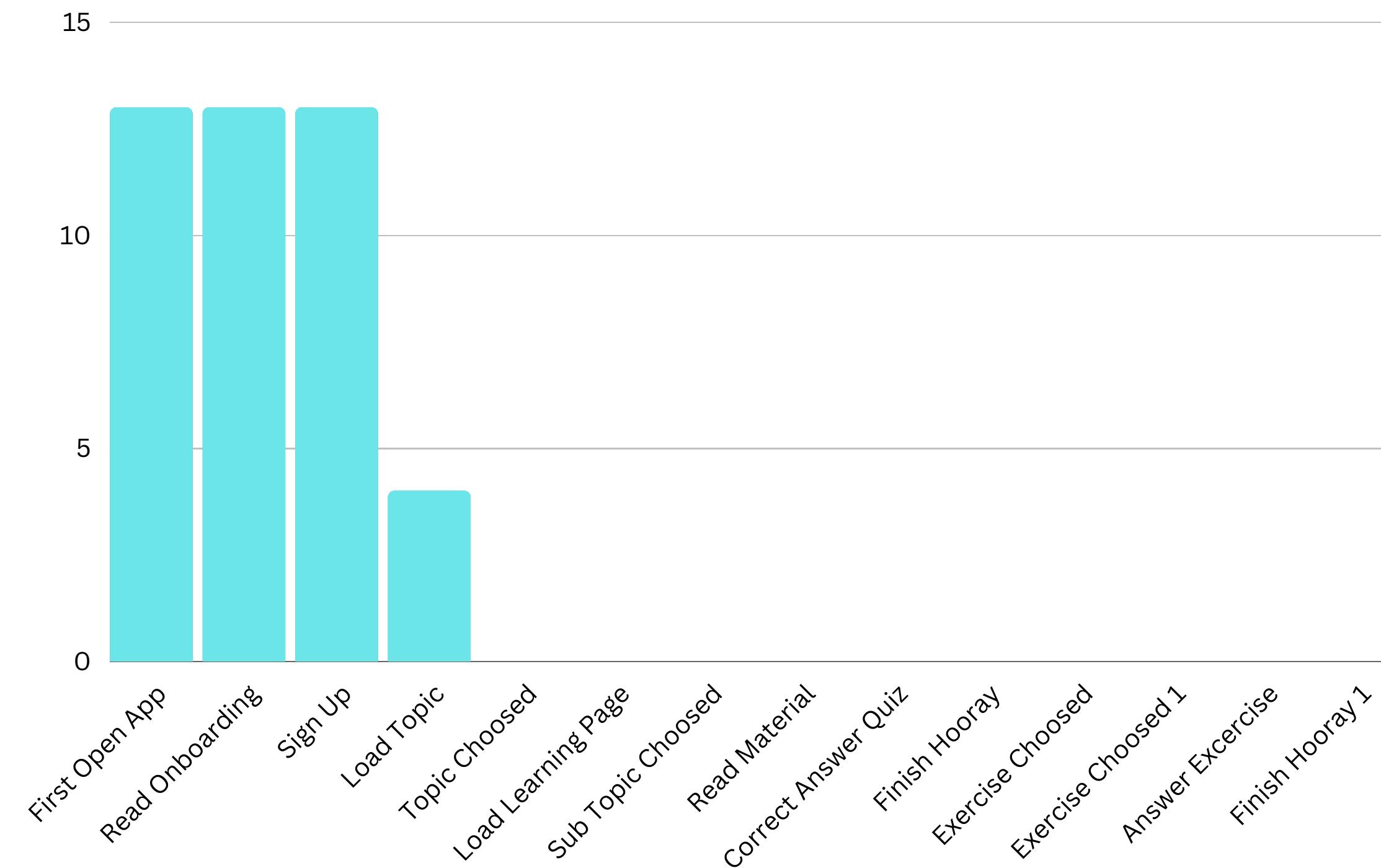
- Improved material according to the review
- Hint feature
- Skin robot



Clustering

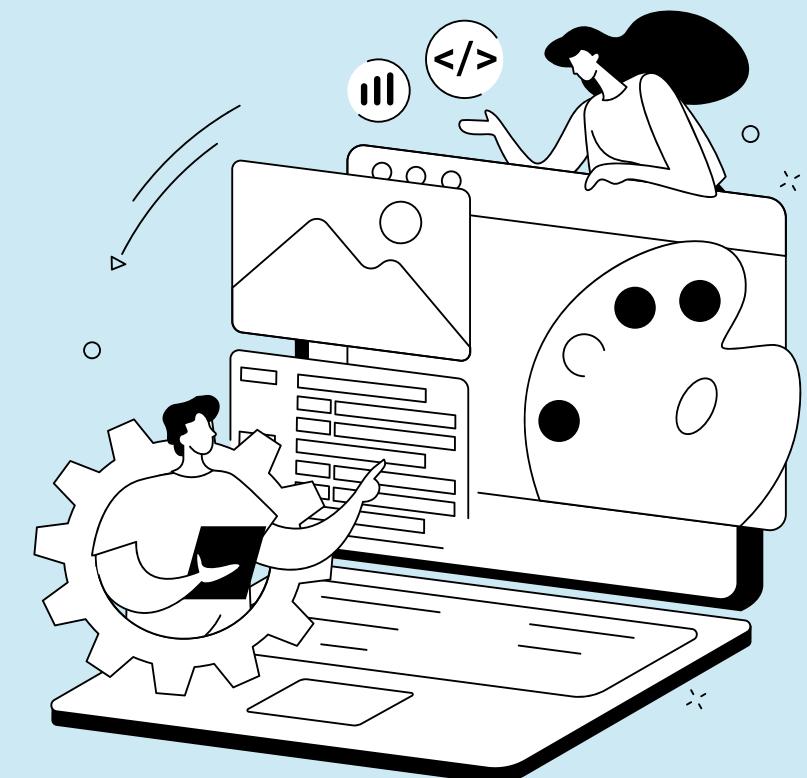
CLUSTER 4

13 User



Recommendation.

- Menu Setting bahasa Indonesia
- Guest Mode



Thank You



**AGUNG W.P.
UBJ x Codr.**

AGUNG W.P.
UBJ x Codr.