



FISH GENIUS

# FISHGENIUS

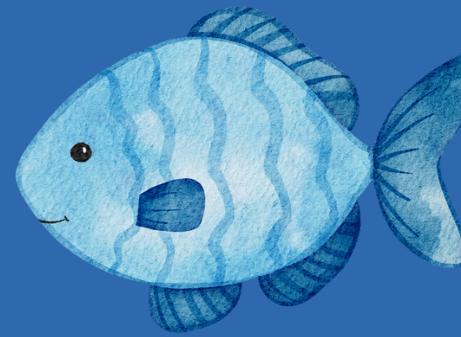
Capstone Project – Bangkit 2024

C241-PS311

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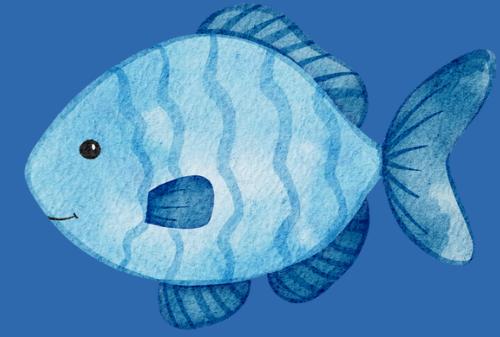
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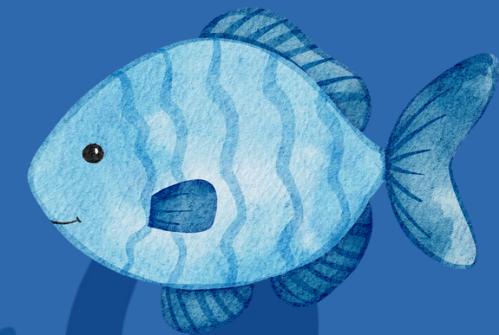
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# OUR TEAM



Febraldi  
Machine Learning



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Machine Learning



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Machine Learning



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Cloud Computing



Zico Marchellino  
Cloud Computing



Haical Ravinda Rassya  
Mobile Development



Mubdi Hariyanto  
Mobile Development

# BACKGROUND



Indonesia, as a maritime country with abundant marine resources, still has opportunities to enhance its fish farming sector to compete globally.

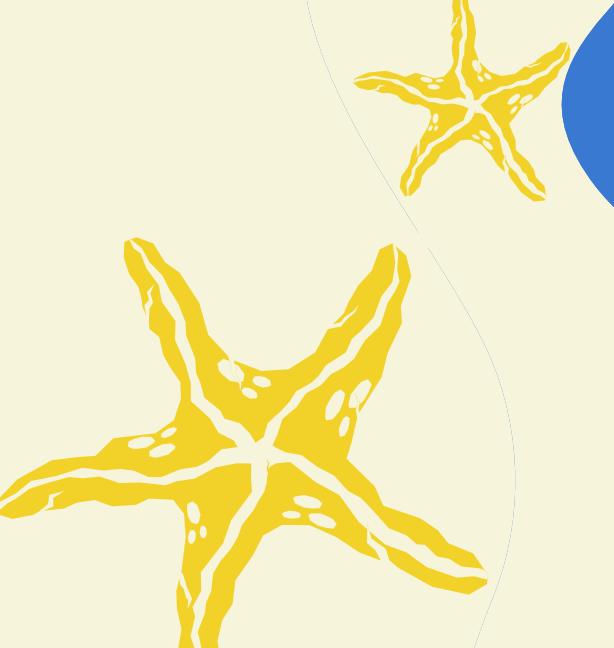
However, we recognize that some fish farmers in Indonesia are not yet aware of fish farming techniques that align with advancements in the field.



# REASON

Our team developed this project after identifying the need for easily accessible and accurate digital educational resources in the field of fish farming. We also recognized the untapped potential for growth in the Indonesian fisheries sector and the need for education aligned with technological advancements.

With the motivation to empower fish farmers and raise awareness about sustainable farming practices, we created the FishGenius application as a solution to meet these needs and make a positive contribution to the global Indonesian fisheries industry.



# EXISTING RESULT

	<b>FishGenius App</b>	<b>Similar KompetitiorApp</b>
<b>Object Detection</b>	✓	✗
<b>Interactive Learning</b>	✓	✗
<b>Quiz &amp; Exercise</b>	✓	✗
<b>Object Criteria Information</b>	✓	✗
<b>Consultation Service</b>	✓	✓
<b>Forum</b>	✓	✓

# IMPLEMENTATION

## DATASET

THE DATASET WE USED IS PROVIDED BY FISHGENIUS. THIS DATASET INCLUDES 8 CLASSES CONSISTING OF IMAGES OF MILKFISH, POMFRET, GOURAMI, CATFISH, TILAPIA, PANGASIUS, SALMON, AND TUNA.

LINK DATASET:

<https://github.com/zicomarchellino7/FishGenius/tree/main/machine%20learning/datasets>



# IMPLEMENTATION

## TRAIN MODEL

```
✓ Train the model

  inputs = pretrained_model.input
  x = resize_and_rescale(inputs)
  x = data_augmentation(x)

  x = Dense(256, activation='relu')(pretrained_model.output)
  x = Dropout(0.2)(x)
  x = Dense(256, activation='relu')(x)
  x = Dropout(0.2)(x)

  outputs = Dense(8, activation='softmax')(x)

  model = Model(inputs=inputs, outputs=outputs)

  model.compile(
    optimizer=Adam(0.00001),
    loss='categorical_crossentropy',
    metrics=['accuracy']
  )

  history = model.fit(
    train_images,
    steps_per_epoch=len(train_images),
    validation_data=val_images,
    validation_steps=len(val_images),
    epochs= 160,
    callbacks=[
      early_stopping,
      create_tensorboard_callback("/content/drive/MyDrive/training_logs",
                                  "/content/drive/MyDrive/fish_classification"),
      checkpoint_callback,
    ]
  )
```

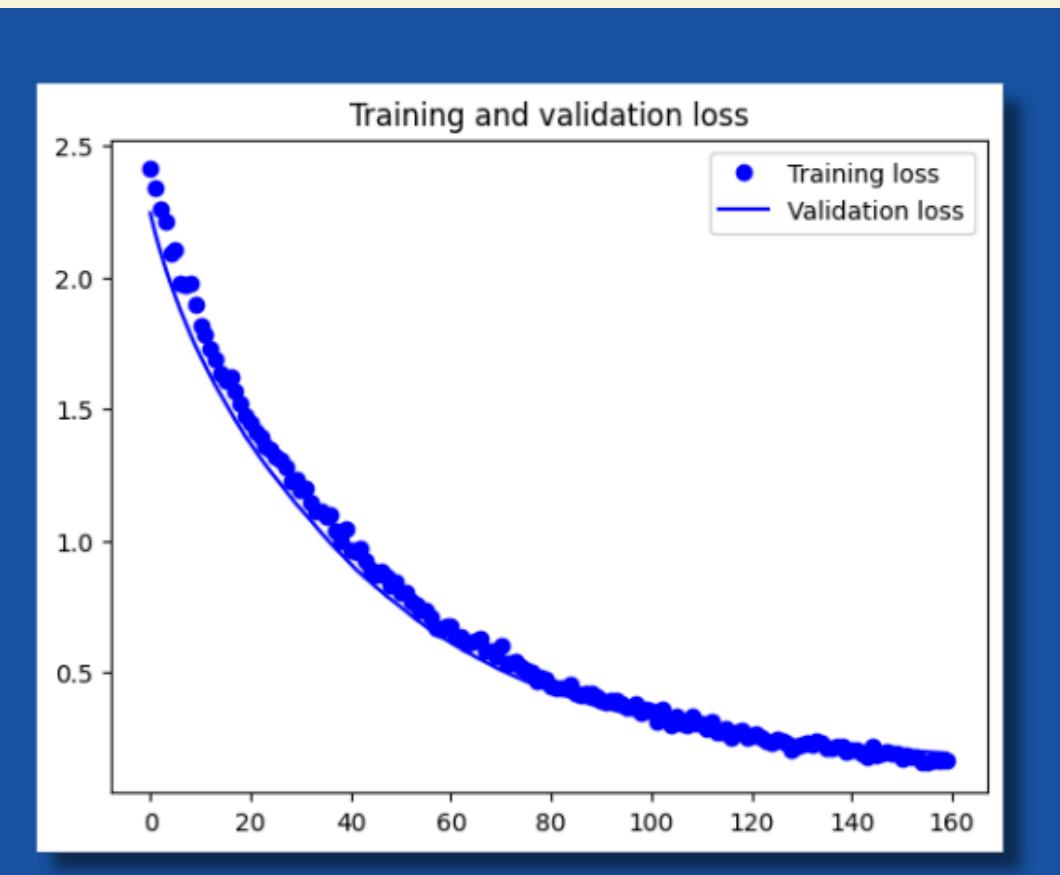
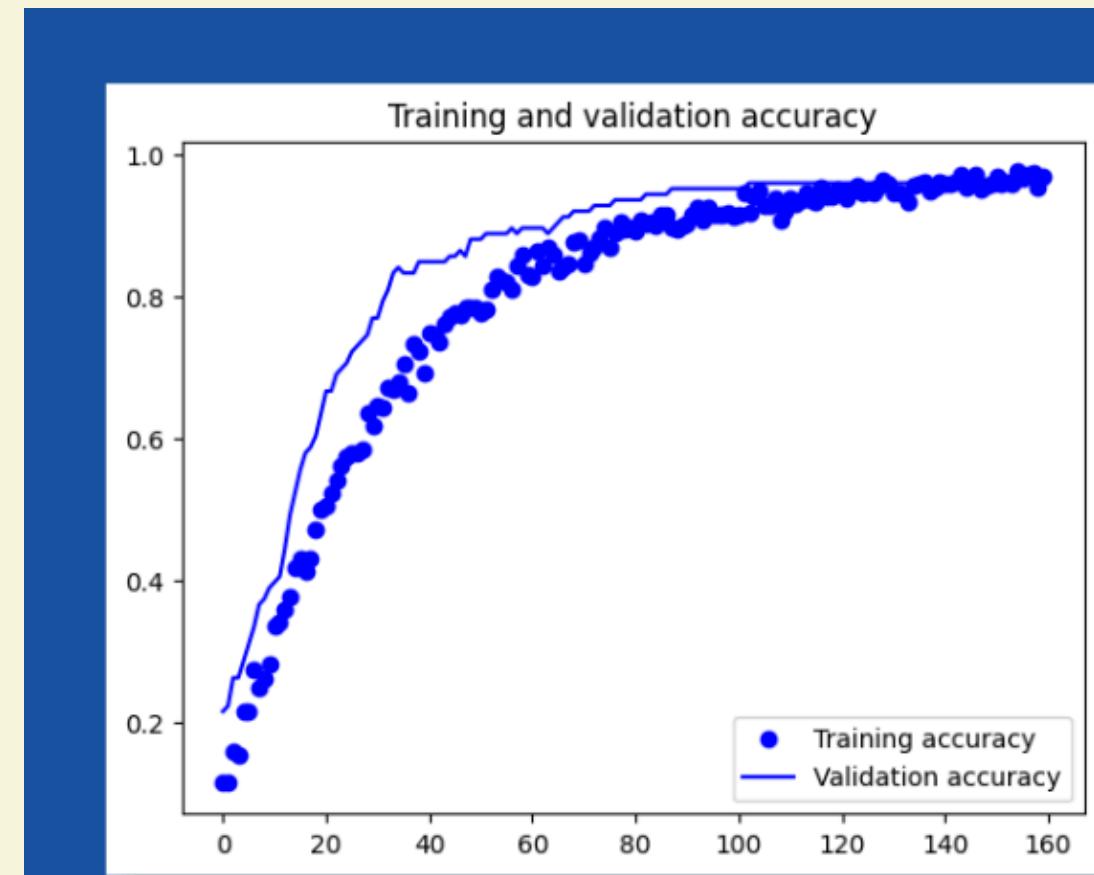
- **Preprocessing:** The input images are resized, rescaled, and augmented to prepare them for the model.
- **Model Construction:** A pre-trained MobileNetV3 model's output is taken, and additional dense (256 units, ReLU activation) and dropout (20% rate) layers are added to refine the learned features.
- **Output Layer:** An output layer with 8 units and softmax activation is added for multi-class classification, suitable for predicting the 8 fish species.
- **Compilation:** The model is compiled with the Adam optimizer (low learning rate of 0.00001), categorical cross-entropy loss, and accuracy as the performance metric.
- **Training:** The model is trained for 160 epochs with early stopping, TensorBoard logging, and checkpointing to save the best model based on validation accuracy.

# IMPLEMENTATION

## FISH CLASSIFICATION

### INDIKATOR :

- TRAIN LOSS : 0.1637
- TRAIN ACC : 0.9702
- VAL LOSS : 0.1913
- VAL ACC : 0.9603



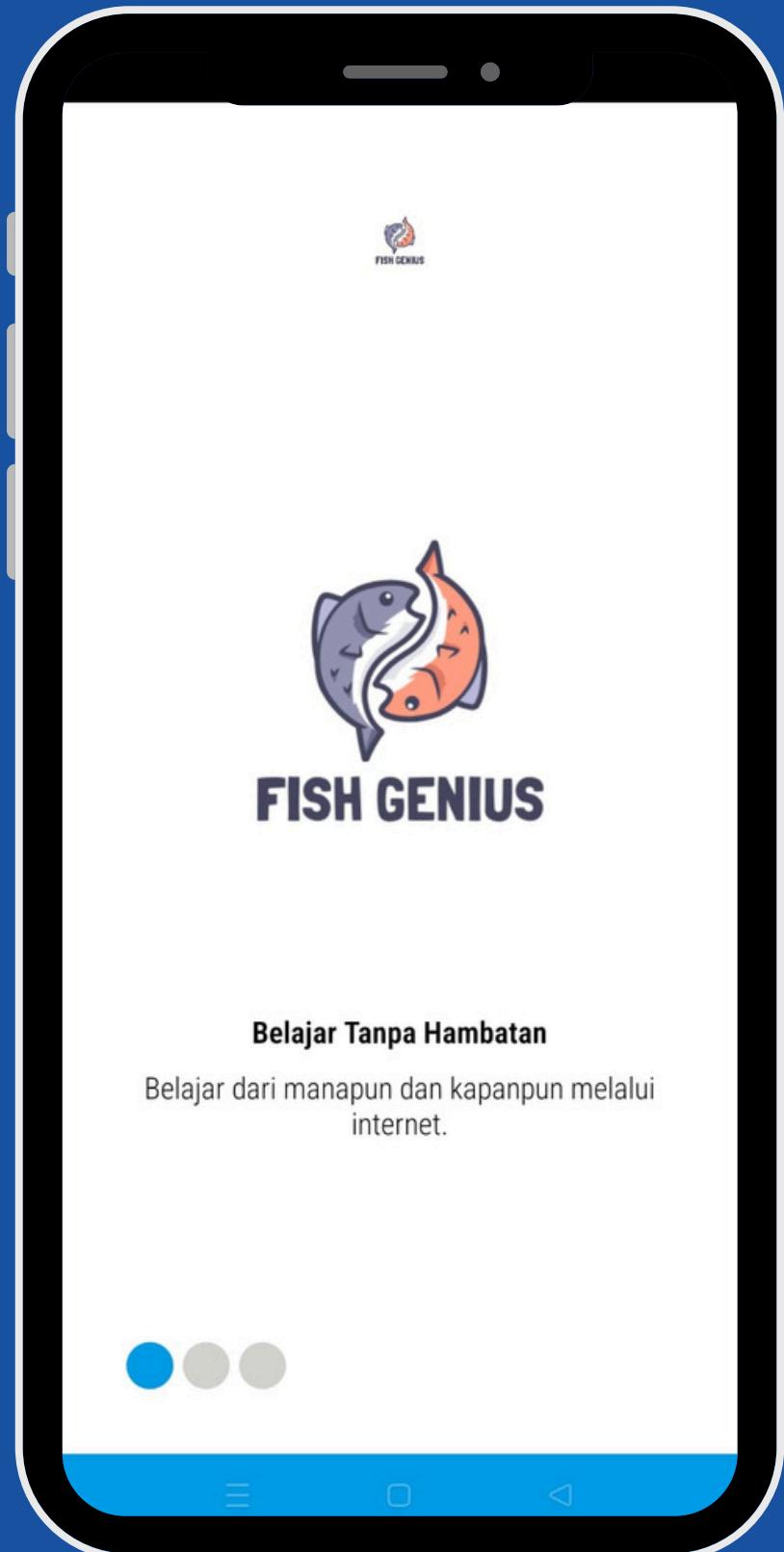
RESULT

# ONBOARDING

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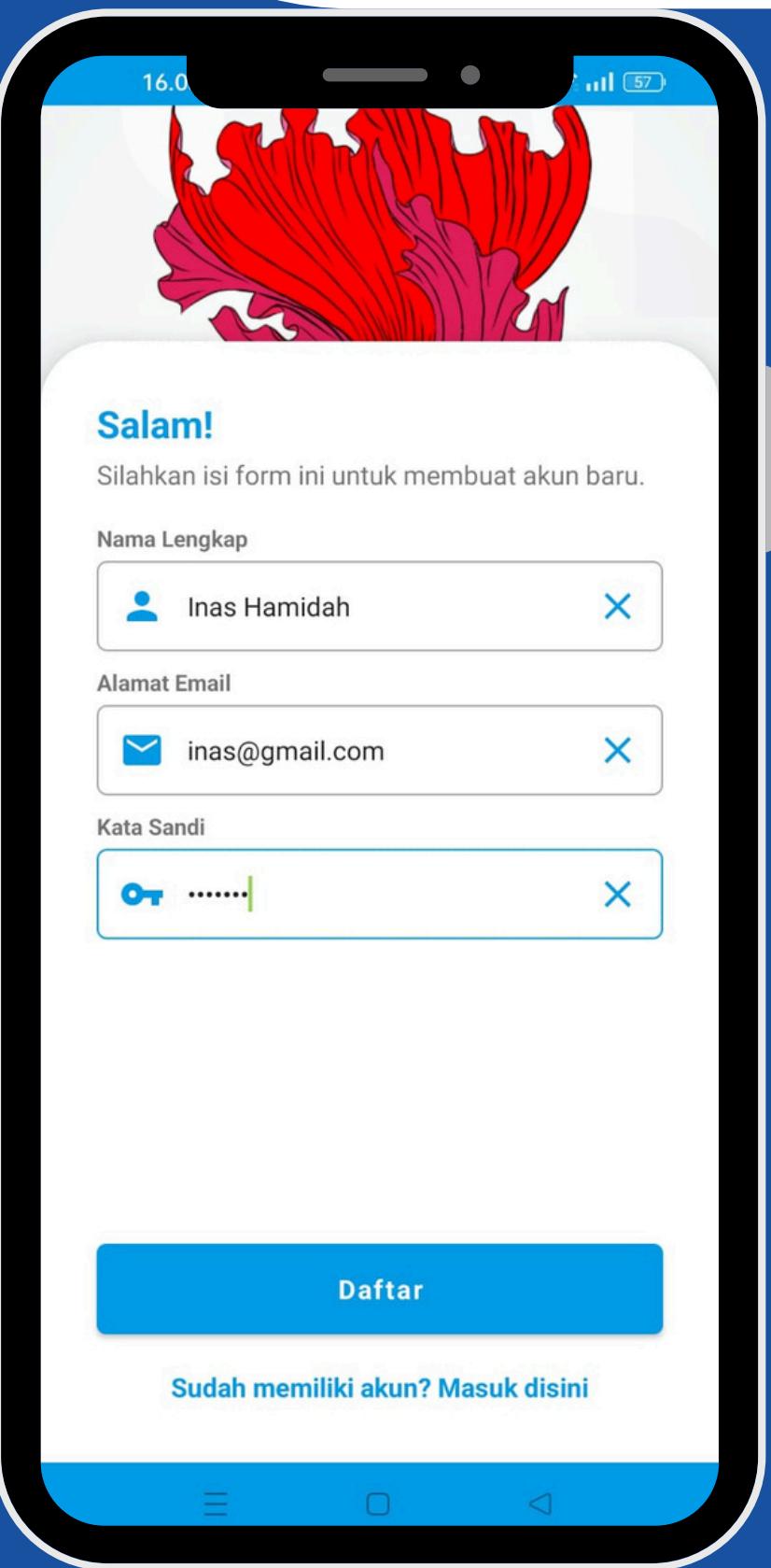
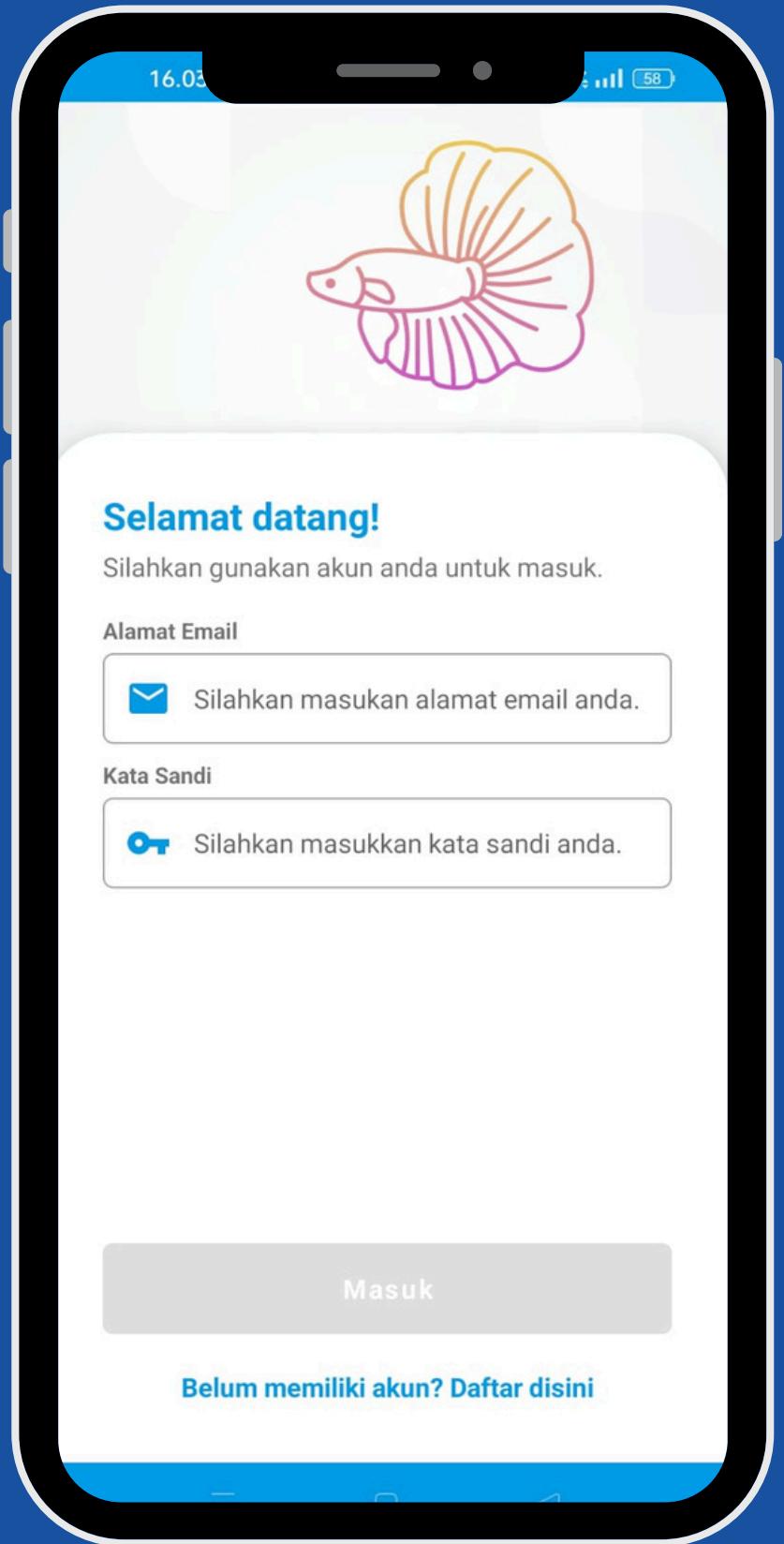


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RESULT

# LOGIN & REGISTER

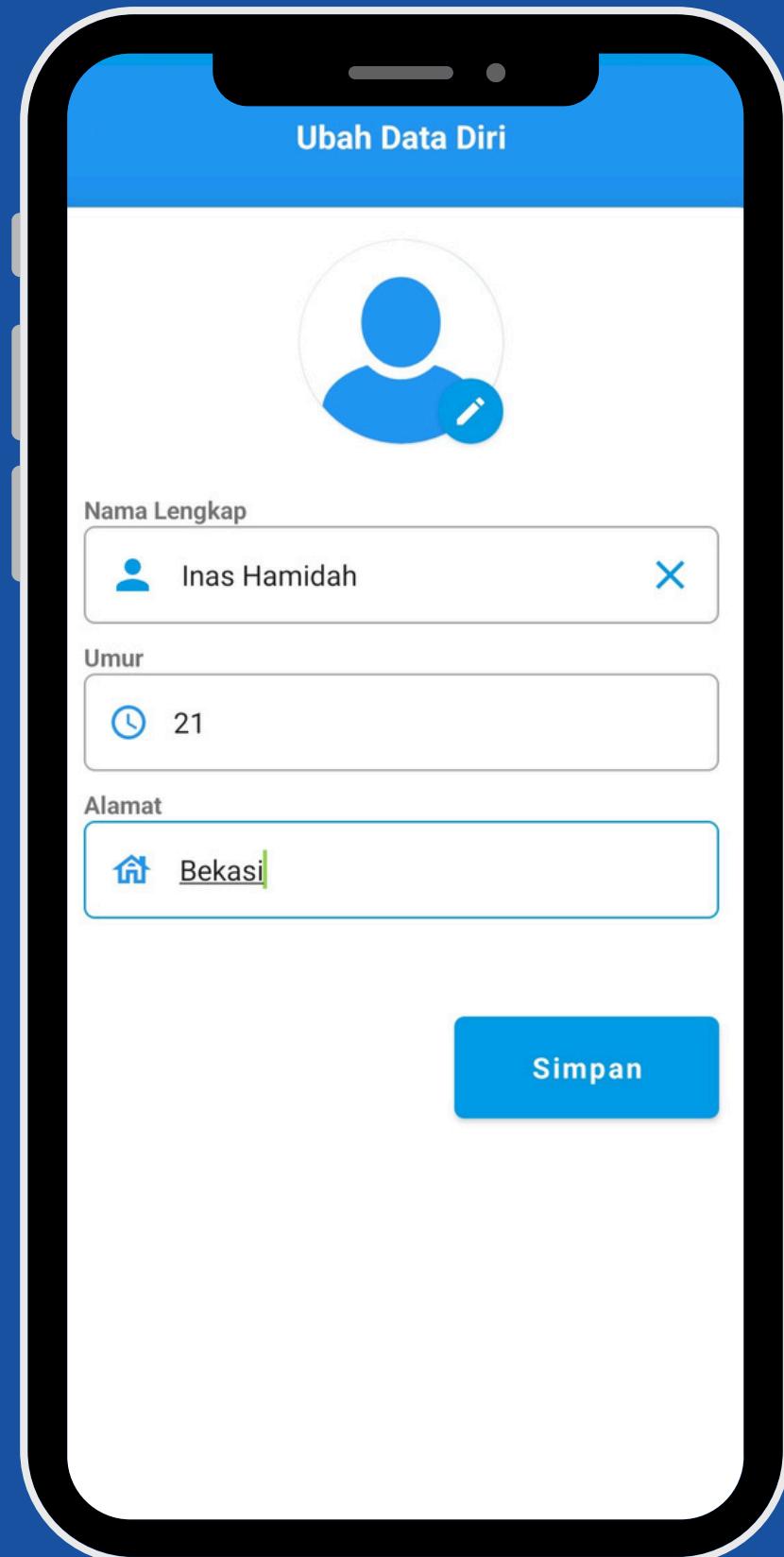
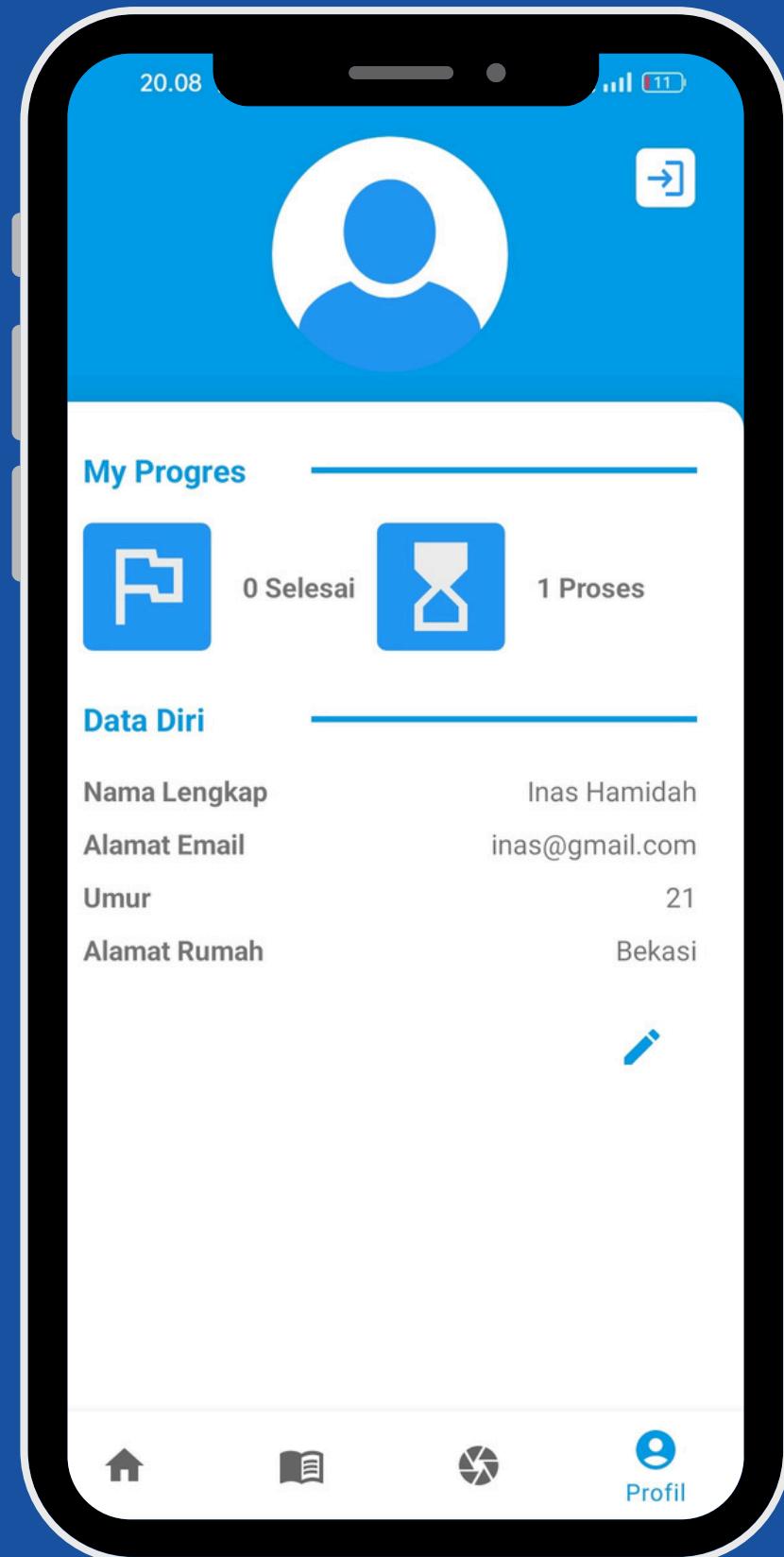
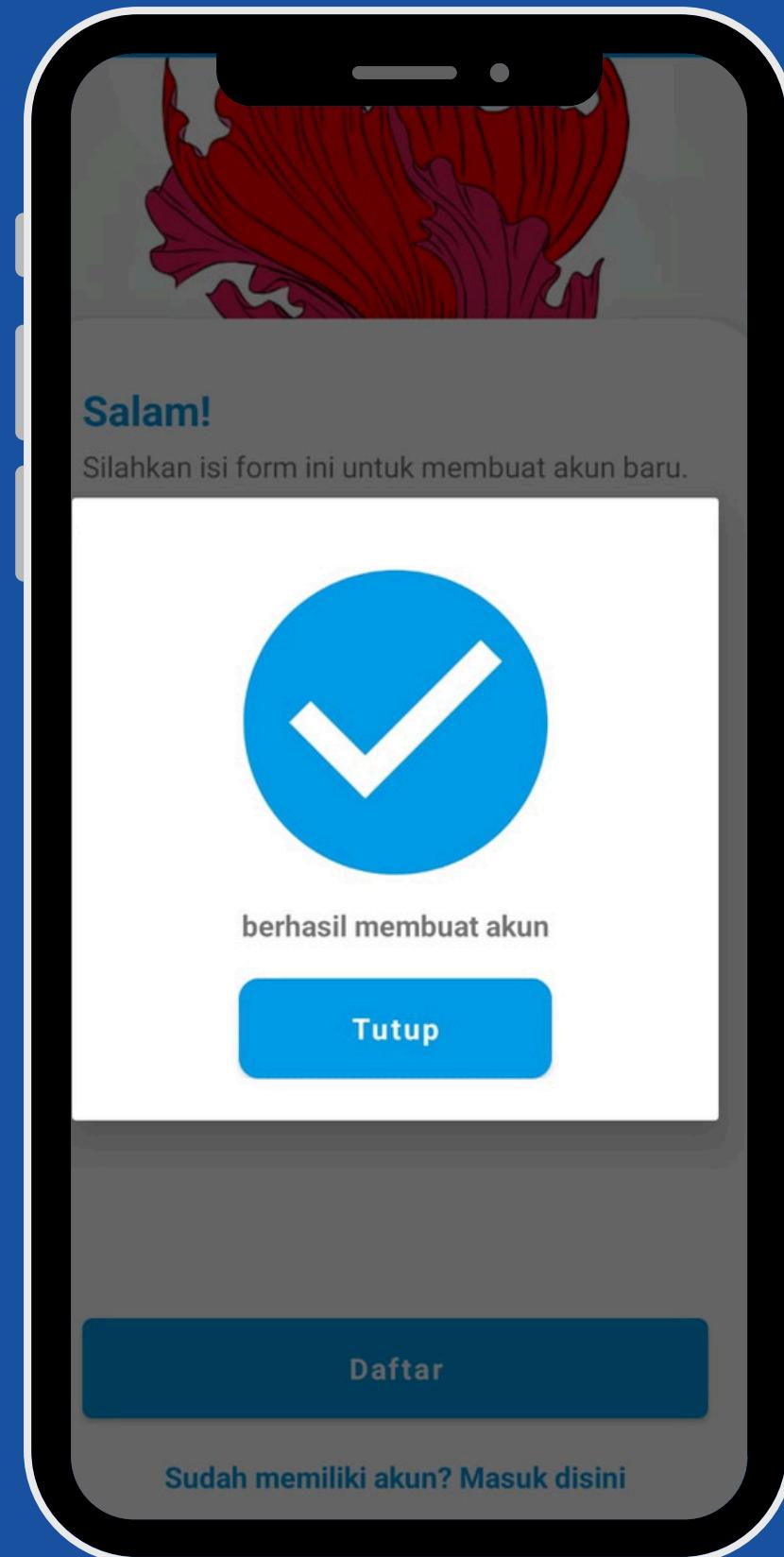


RESULT

# PROFILE

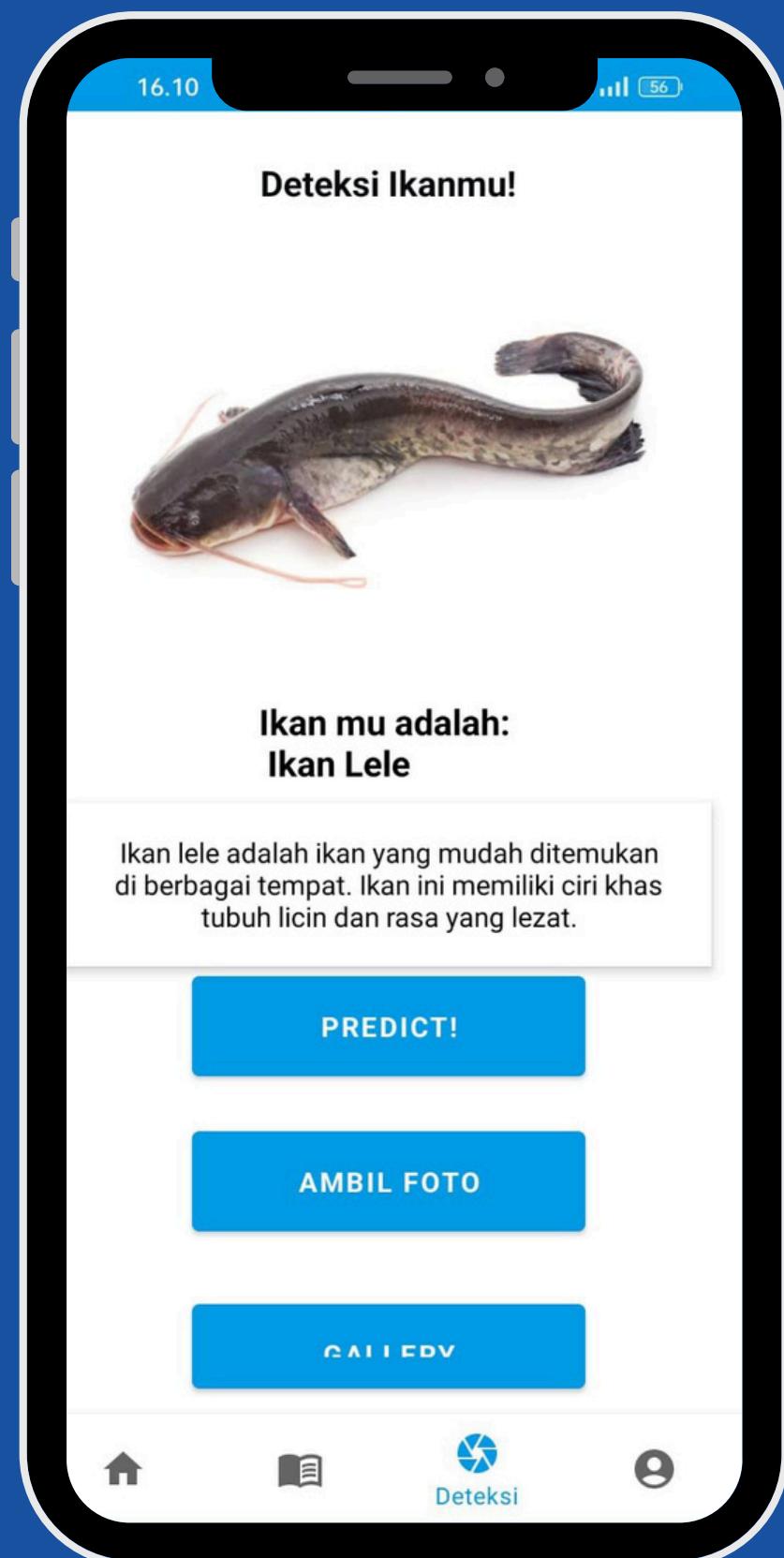
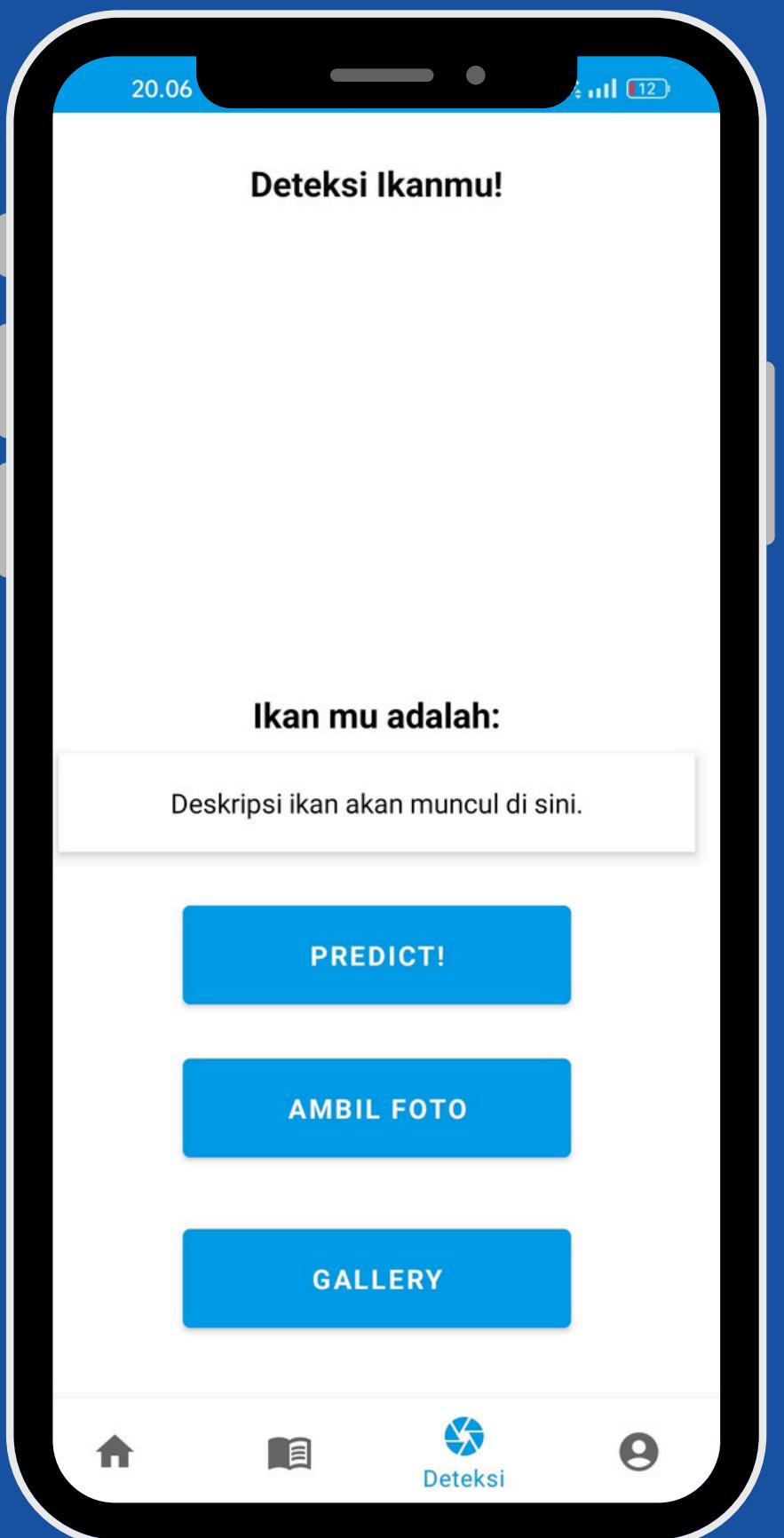
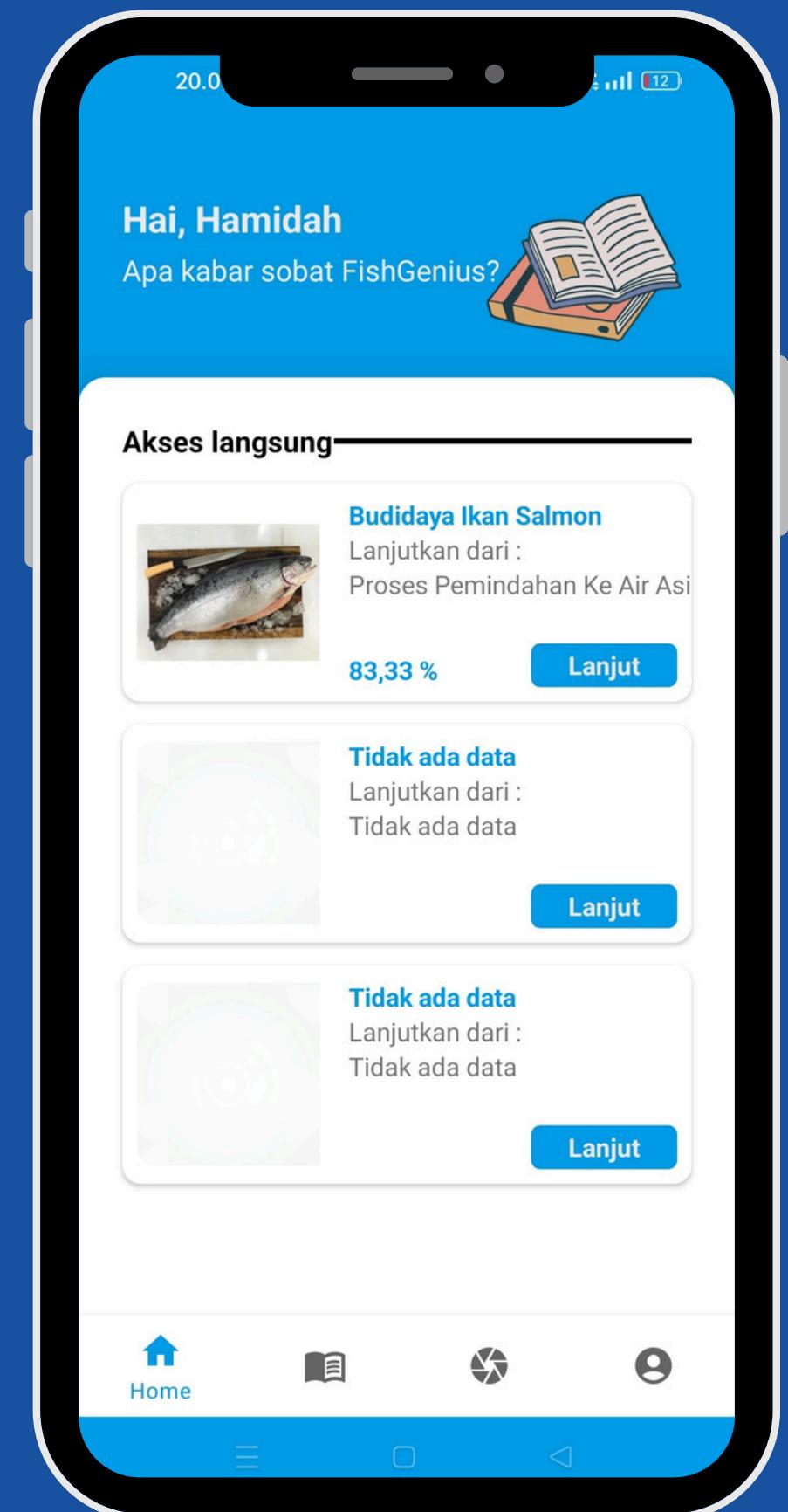
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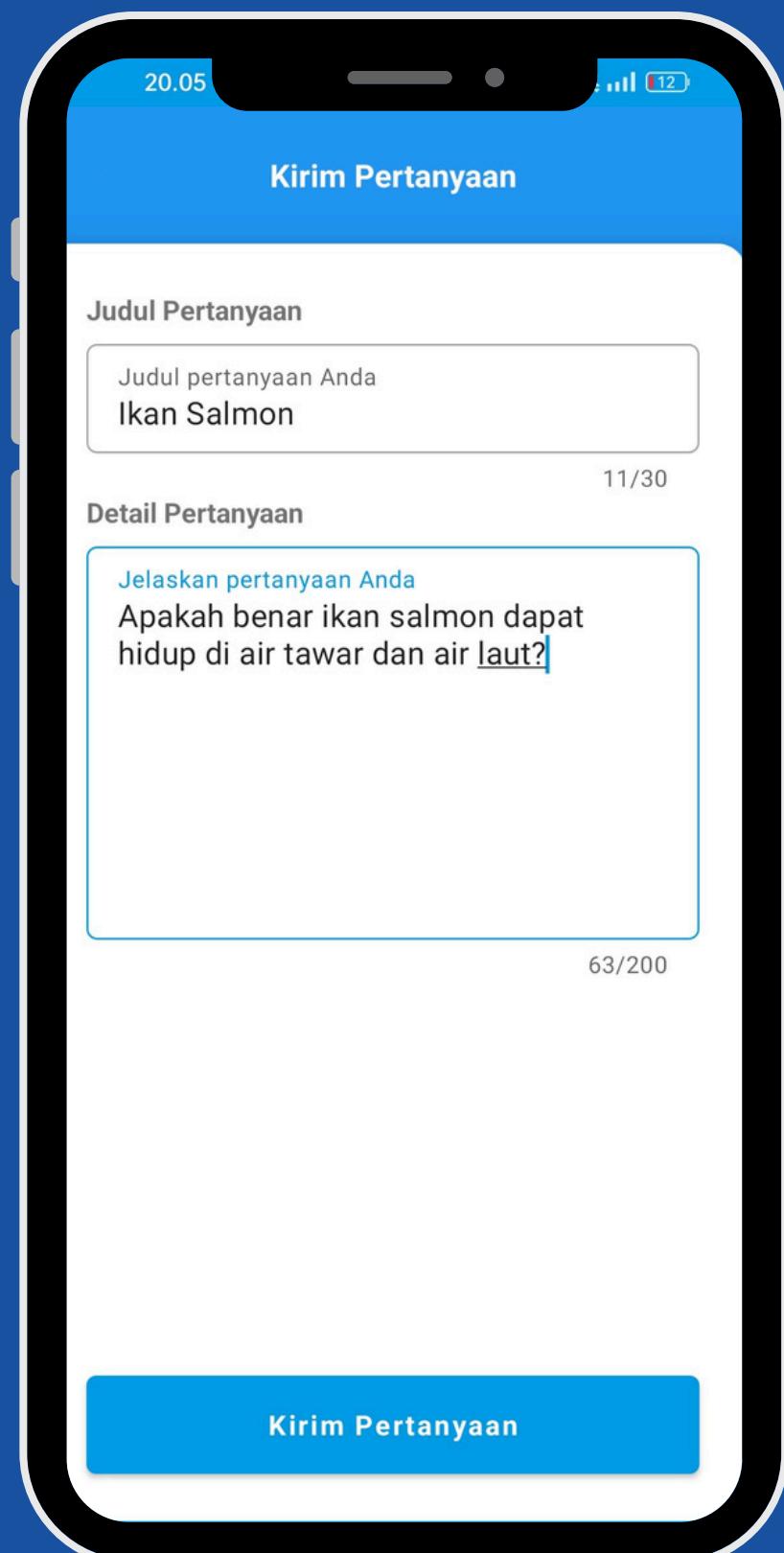


RESULT

# HOME FRAGMENT & DETECTION



## FORUM &amp; DETAIL CLASS



20.05

Kirim Pertanyaan

Judul Pertanyaan

Judul pertanyaan Anda  
Ikan Salmon

11/30

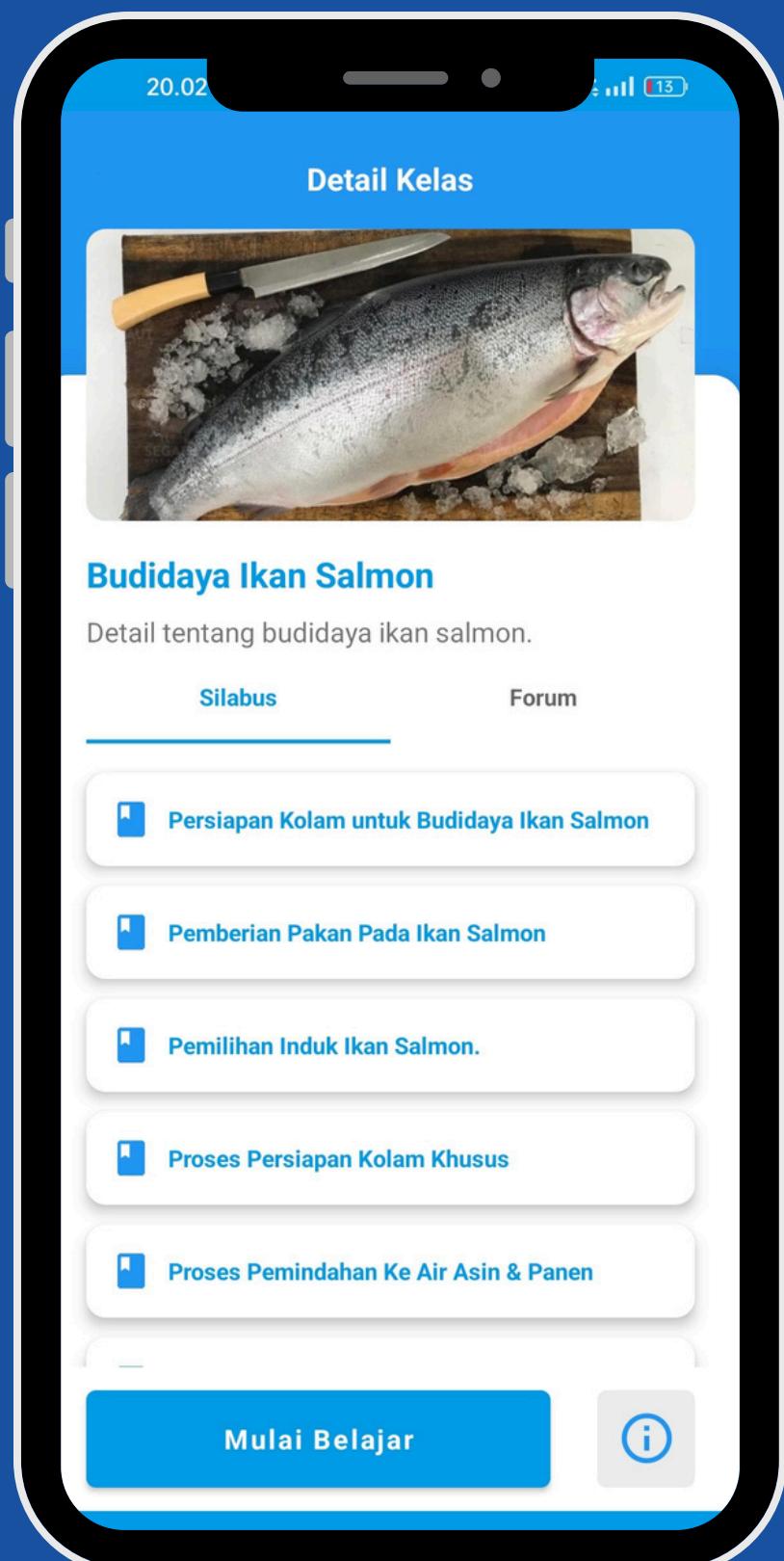
Detail Pertanyaan

Jelaskan pertanyaan Anda

Apakah benar ikan salmon dapat hidup di air tawar dan air laut?

63/200

Kirim Pertanyaan



20.02

Detail Kelas



**Budidaya Ikan Salmon**

Detail tentang budidaya ikan salmon.

Silabus

Forum

- Persiapan Kolam untuk Budidaya Ikan Salmon
- Pemberian Pakan Pada Ikan Salmon
- Pemilihan Induk Ikan Salmon.
- Proses Persiapan Kolam Khusus
- Proses Pemindahan Ke Air Asin & Panen

Mulai Belajar



20.02

**Budidaya Ikan Salmon**



**Proses Pemindahan Ke Air Asin & Panen**

Setelah melakukan tahapan pada proses pemberian pakan dalam budidaya ikan salmon, langkah selanjutnya yang perlu diperhatikan adalah pada tahapan proses pemindahan ke air asin. Adapun langkah – langkah yang dapat dilakukan dalam proses pemindahan ke air asin adalah sebagai berikut: Ketika terdapat perubahan fisiologis pada ikan salmon yang akan berakhir ketika ikan salmon tersebut memiliki ukuran sekitar 10 sampai dengan 12 cm serta bobot ikan salmon tersebut mencapai sekitar 100 gram, lakukanlah pemindahan dari wadahnya pada lokasi jaring pada perairan asin atau pada air laut. Peliharalah ikan salmon tersebut di jaring apung selama kurun waktu sekitar 18 bulan sampai dengan salmon tersebut berubah menjadi salmon smolt yang memiliki ukuran berat sekitar 4,5 kg per ekor dan proses panen. Setelah melakukan tahapan pada proses pemindahan ke air asin dalam budidaya ikan salmon, langkah selanjutnya

Sebelumnya

Selanjutnya

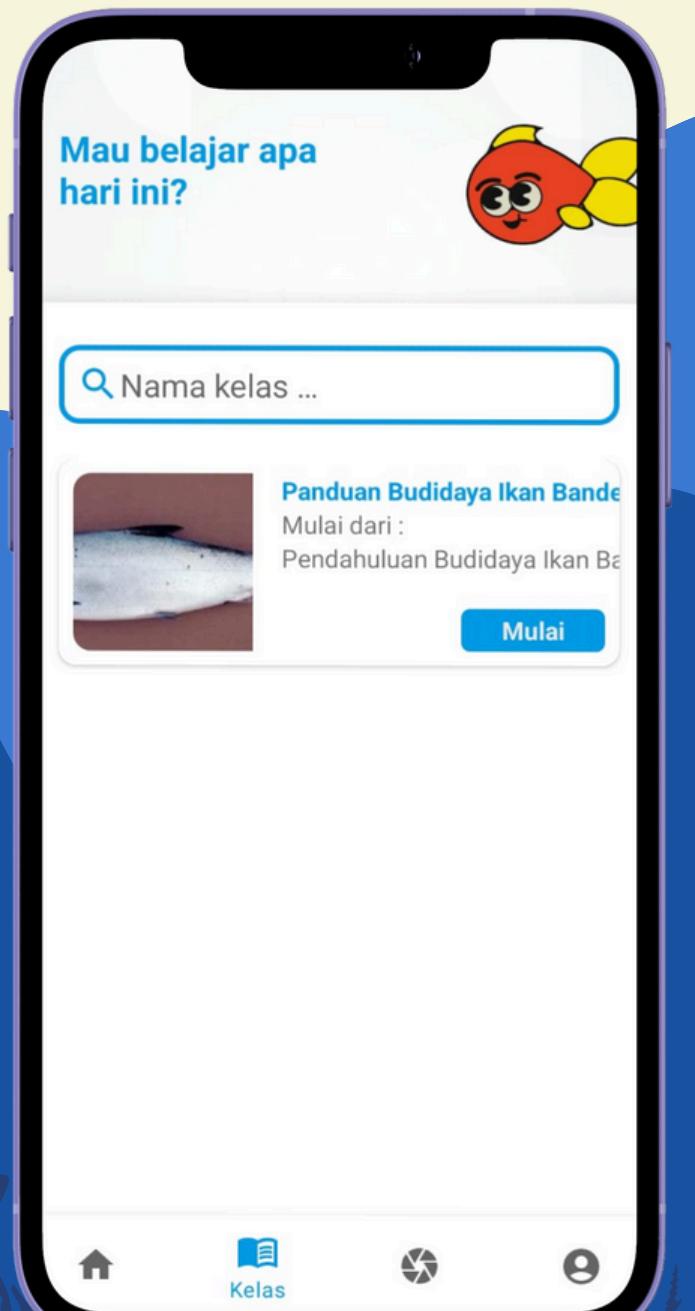
RESULT

# EDUCATIONAL FEATURE

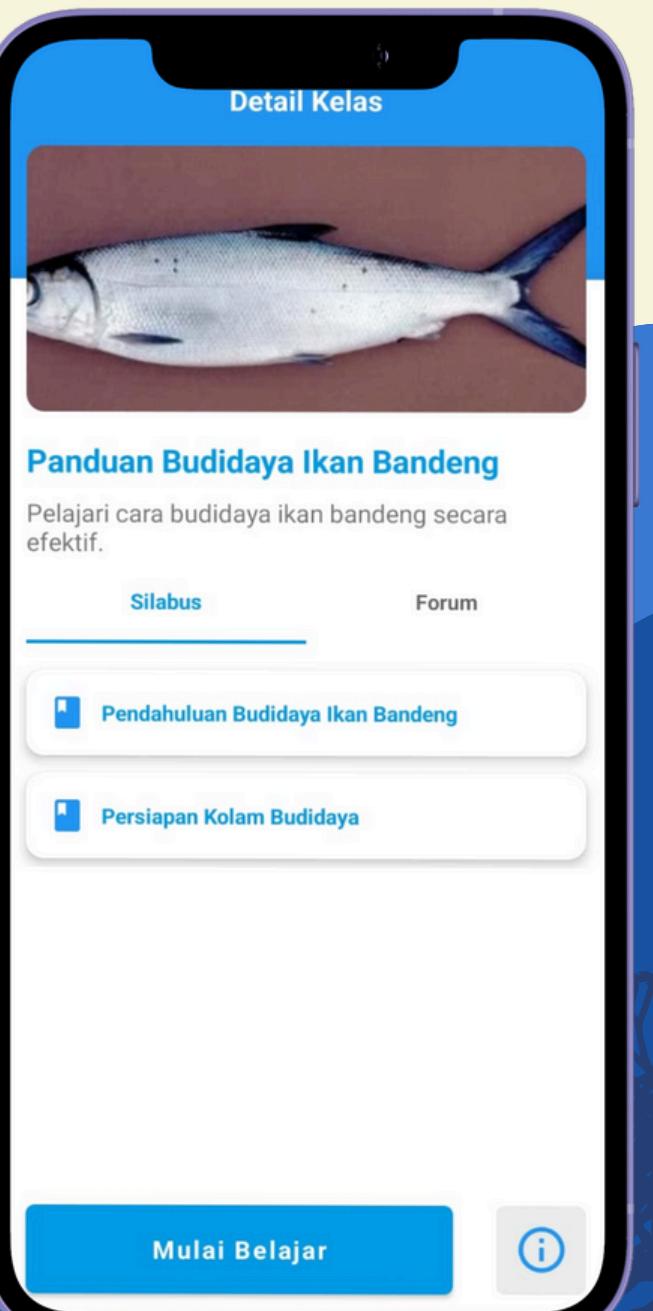
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Display the class information



Display module of learning



Class Content

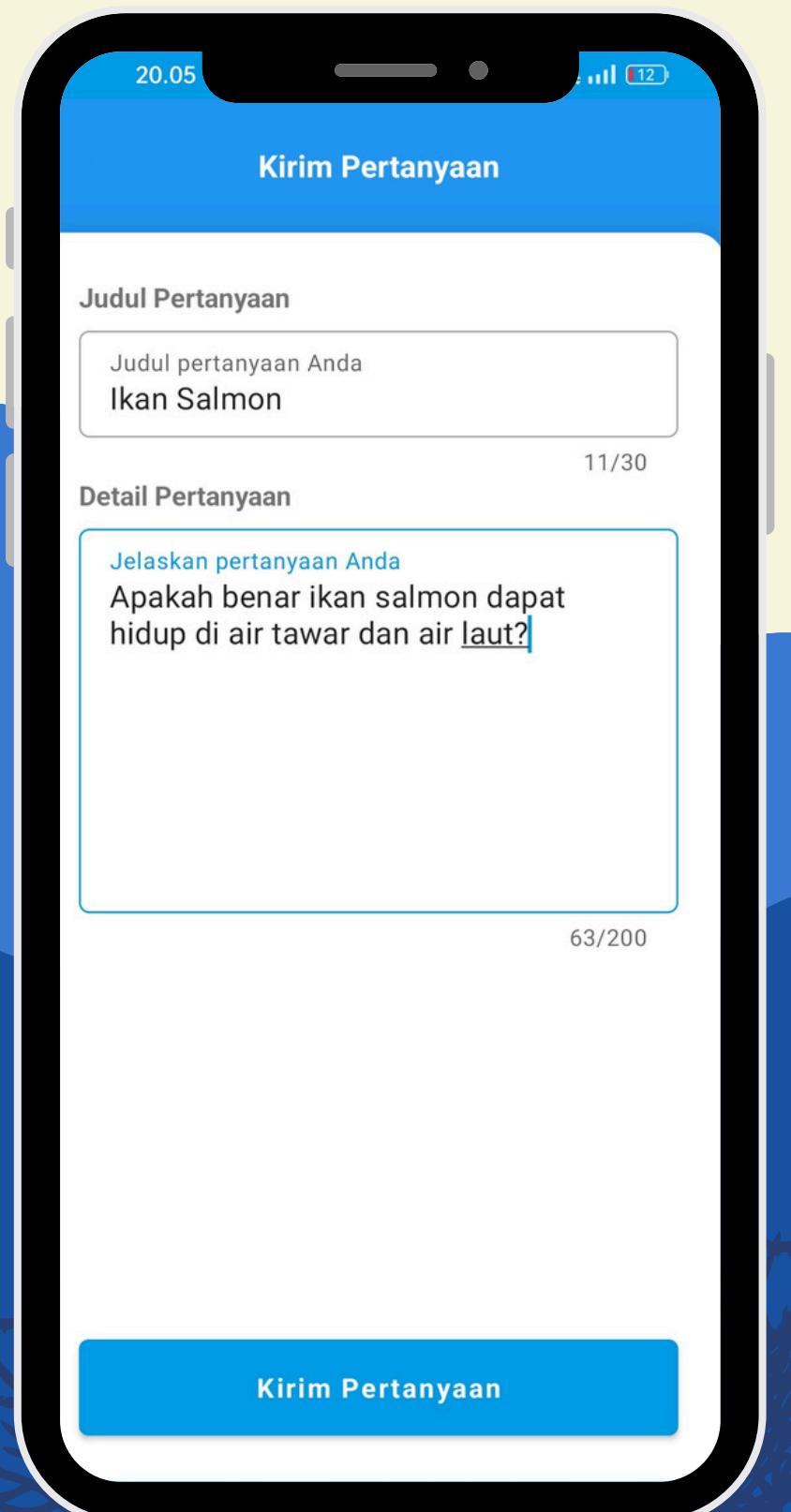


RESULT

# FORUM FEATURE

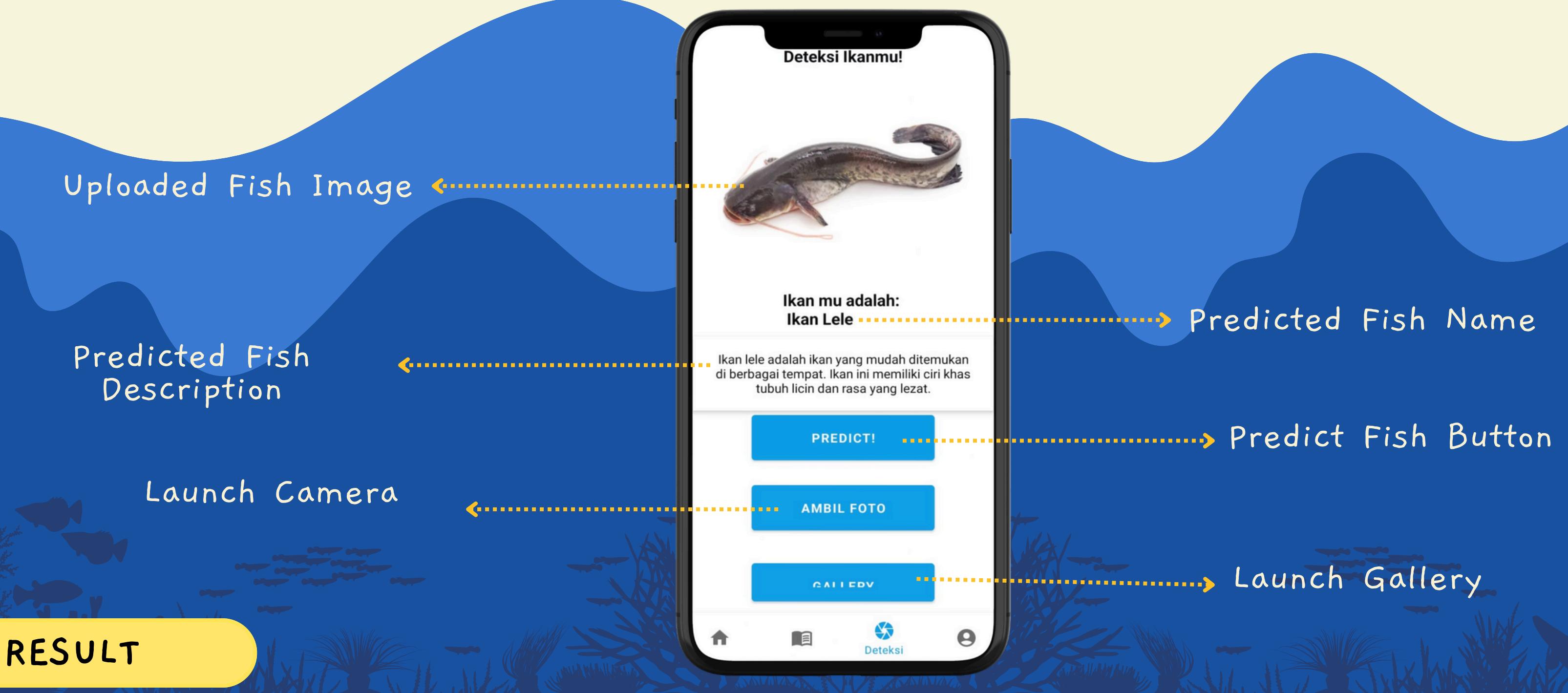
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# FISH CLASSIFICATION

Fish Classification identify the species of fish by examining the picture

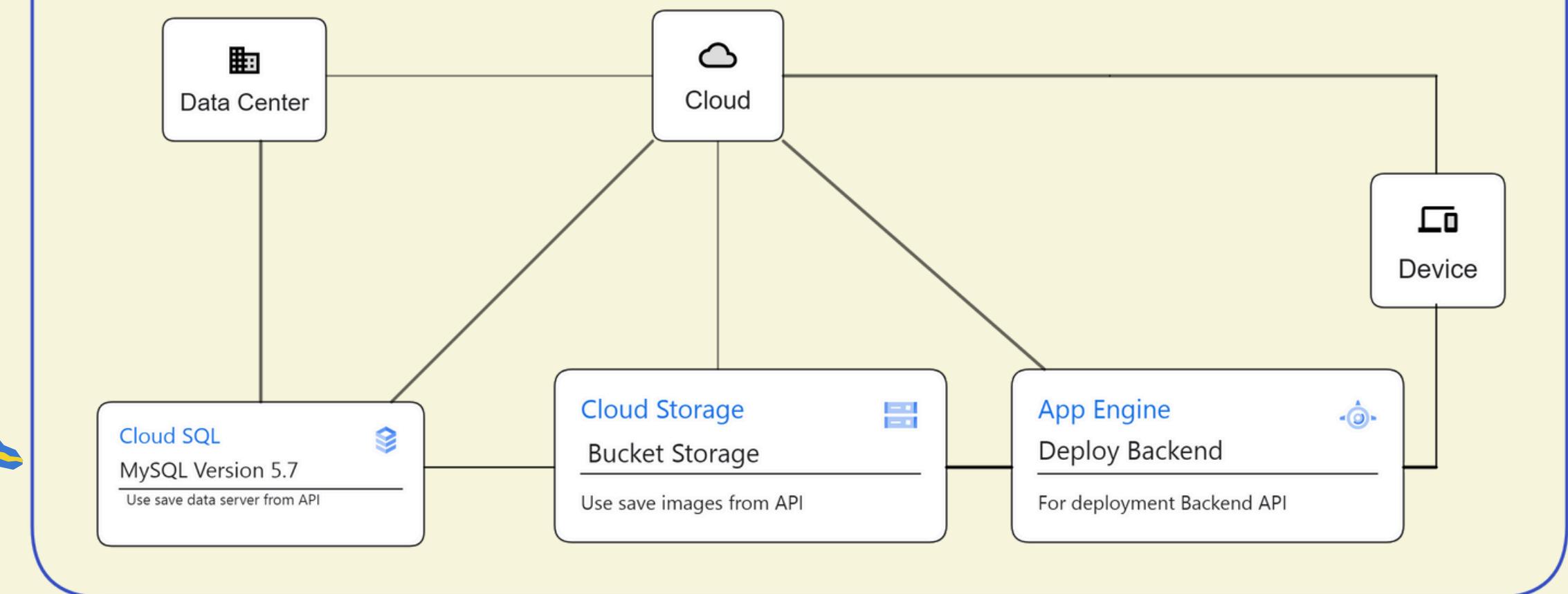


# DOCUMENTATION

## CLOUD ARCHITECTURE

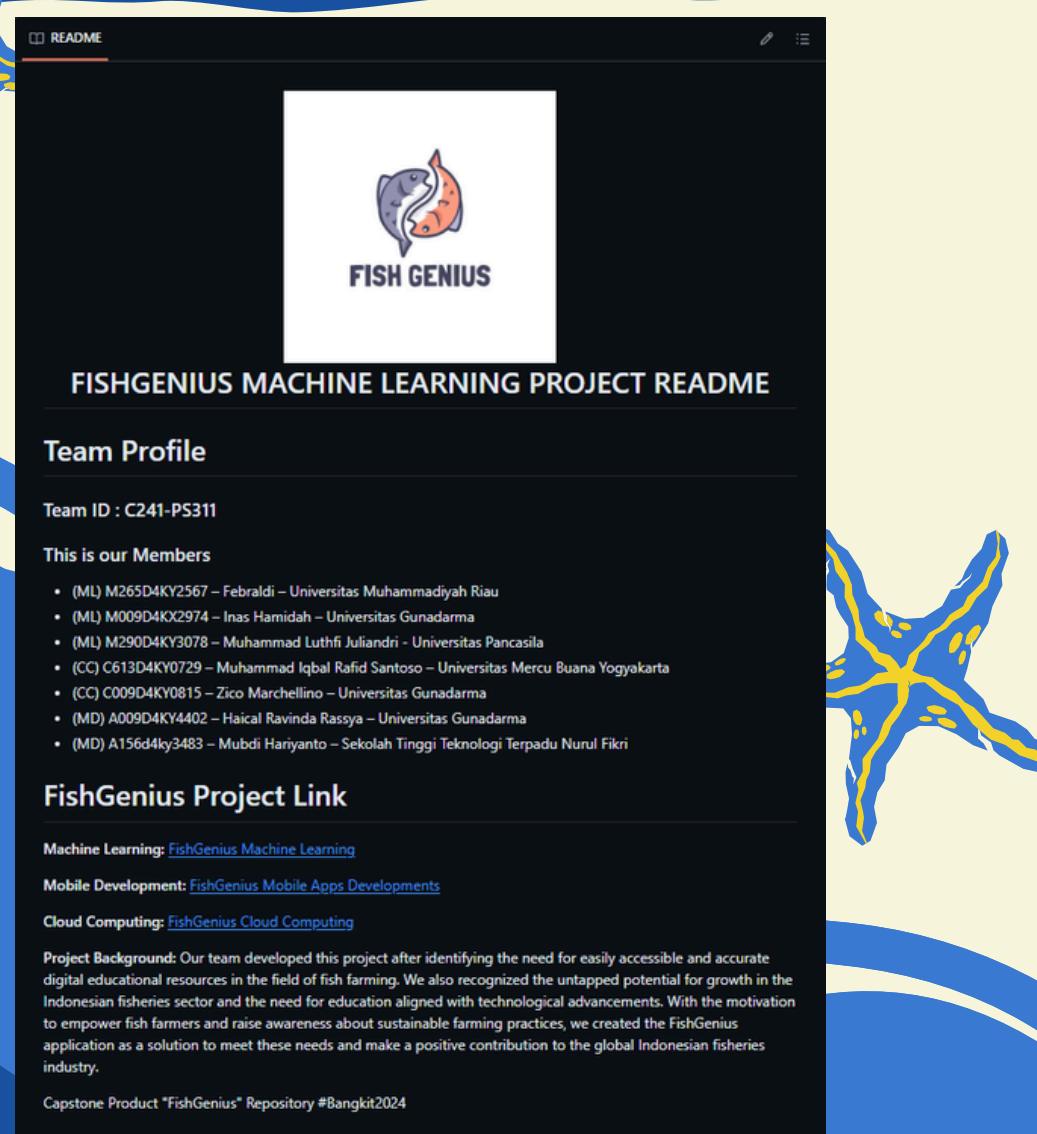


### Cloud Architecture "FishGenius App"



# DOCUMENTATION

## GIT READ.ME



<https://github.com/zicomarchellino7/FishGenius/tree/main>

### How to installation:

#### 1. Clone this Project to your Computer

git clone <https://github.com/zicomarchellino7/FishGenius.git>  
and open Android Studio

In Android Studio, click on File > Open > Navigate to the cloned repository directory and select the Mobile Development folder > Click OK.

#### 2. Run Project in Android Studio

Wait for Grandle Build to Finish and finally press the Run > Run app. Now the app has been installed in your phone/emulator.

# DEPLOYMENT PLAN

## Timeline

Mock Up → Layouting → API And Database Implementation → Testing



# TOOLS



## FISHGENIUS DEMO APP

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[FishGenius Demo App Link](#)



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# THANK YOU