Ubiquitous and Mobile Computing CS 528: *Google Pay (formerly Android Pay) Tech Talk*

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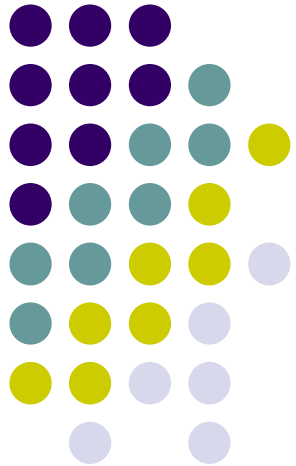
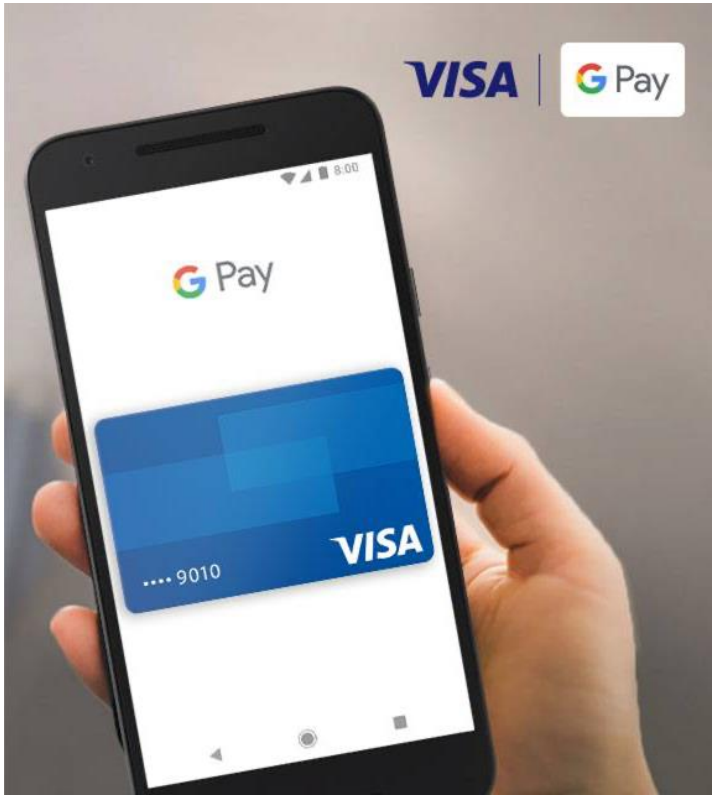


G Pay

What is Google Pay?



- Digital Wallet
- Tap-to-Pay
- (NFC) p

Pay

History

G Pay

~ 70%

> 70,000

Why Google Pay?

Customer

Security

Availability

Ease of Use

G Pay

Why Google Pay?

Merchant

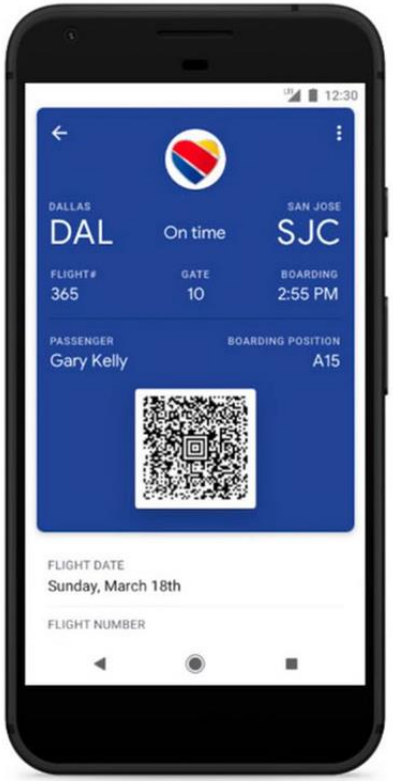
Security

Sales

Easy Integration

G Pay

Much more than Pay!

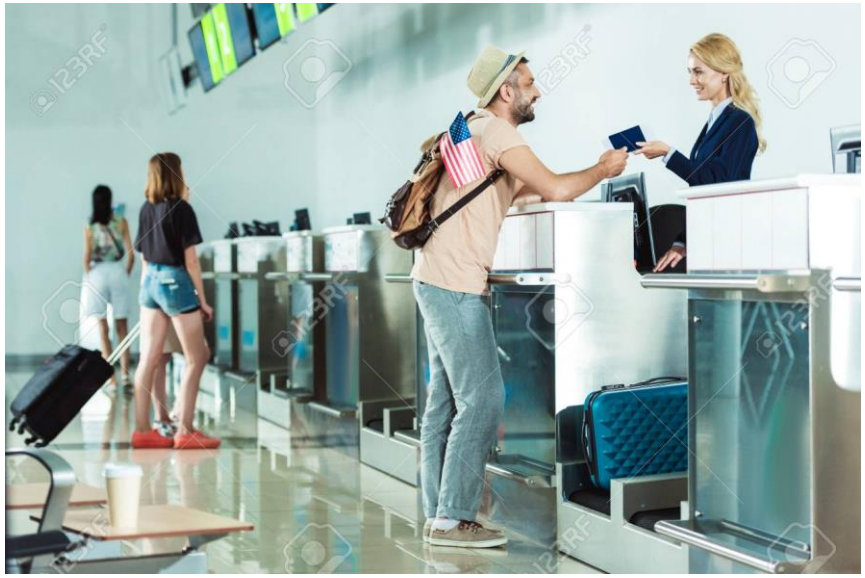


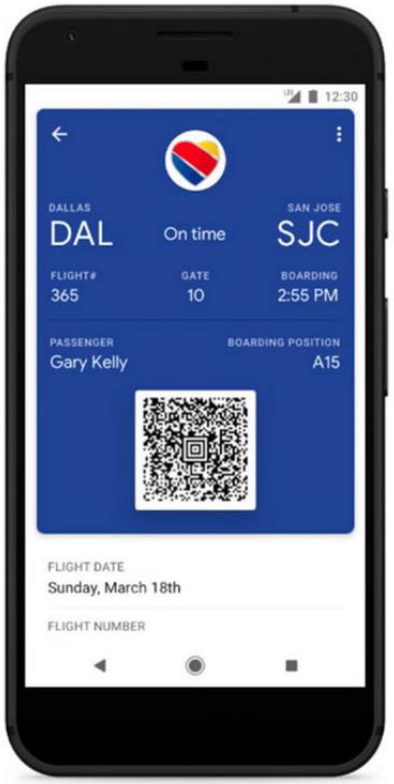
G Pay

Use Case

G Pay

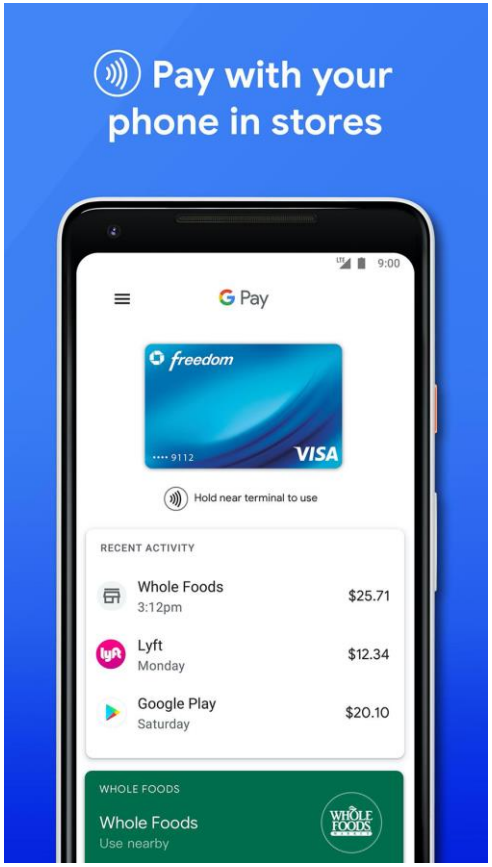
Use Case




12:30
DALLAS
DAL
On time
SAN JOSE
SJC
FLIGHT#
365
GATE
10
BOARDING
2:55 PM
PASSENGER
Gary Kelly
BOARDING POSITION
A15
FLIGHT DATE
Sunday, March 18th
FLIGHT NUMBER

Pay

Use Case



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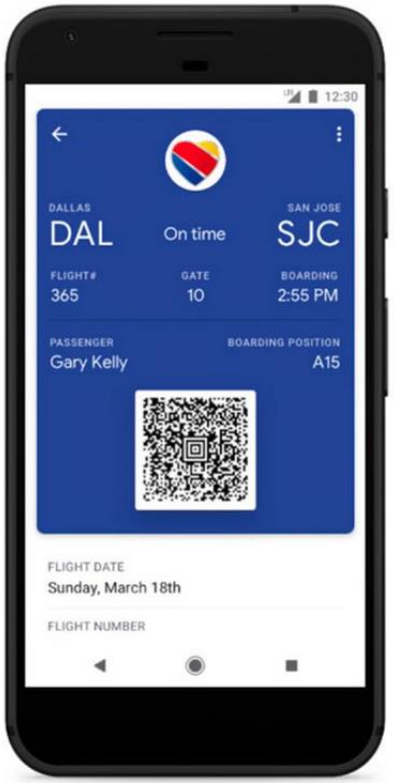
Use Case



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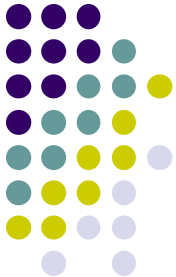
Known Implementations



TRADER JOE'S

BEST BUY

AMERICAN EAGLE OUTFITTERS

Blue Apron

airbnb

Walgreens

bloomingdale's

FANDANGO

DOORDASH

GameStop
POWER TO THE PLAYERS

KFC

KAYAK

Bank of America

AMERICAN EXPRESS

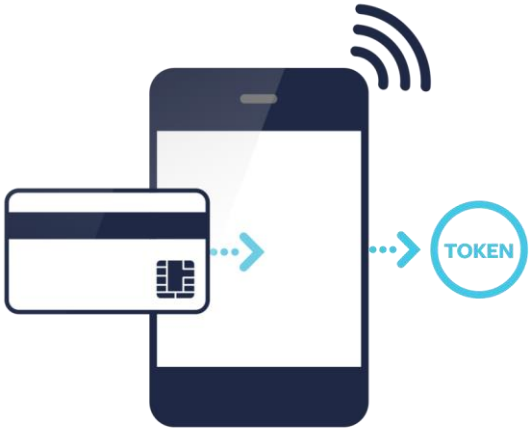
CapitalOne

TD Bank

DISCOVER

G Pay

How does it work?



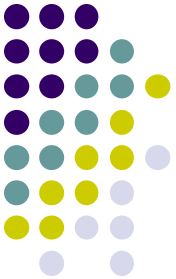
Tokenization

NFC

Smart Authentication

G Pay

Code



1. Choose Google Pay API version

```
private static JSONObject getBaseRequest() throws JSONException {
    return new JSONObject().put("apiVersion", 2).put("apiVersionMinor", 0);
}
```

1. Choose a payment tokenization method

```
private static JSONObject getGatewayTokenizationSpecification() throws JSONException {
    return new JSONObject(){{      put("type", "PAYMENT_GATEWAY");
      put("parameters", new JSONObject(){{        put("gateway", "example");
        put("gatewayMerchantId", "exampleGatewayMerchantId");
        }
      });
    }};
}
```

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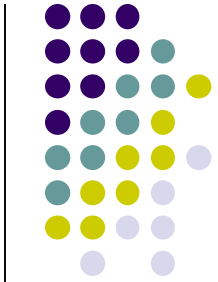
Code



3. Define supported payment methods

```
private static JSONArray getAllowedCardNetworks() {
  return new JSONArray()
      .put("AMEX")
      .put("DISCOVER")
      .put("INTERAC");
      .put("JCB")
      .put("MASTERCARD")
      .put("VISA");
}
```

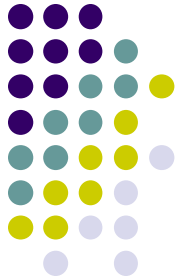
Pay

Code

4. Describe your allowed payment methods

```
  private static JSONObject getBaseCardPaymentMethod() throws JSONException {
    JSONObject cardPaymentMethod = new JSONObject();
    cardPaymentMethod.put("type", "CARD");

    JSONObject parameters = new JSONObject();
    parameters.put("allowedAuthMethods", getAllowedCardAuthMethods());
    parameters.put("allowedCardNetworks", getAllowedCardNetworks());
    // Optionally, you can add billing address/phone number associated with a CARD payment
method.
    parameters.put("billingAddressRequired", true);

    JSONObject billingAddressParameters = new JSONObject();
    billingAddressParameters.put("format", "FULL");

    parameters.put("billingAddressParameters", billingAddressParameters);

    cardPaymentMethod.put("parameters", parameters);

    return cardPaymentMethod;
  }
```

Pay



Code

5. Create a PaymentsClient instance

6. Determine readiness to pay with the Google Pay API

7. Create PaymentDataRequest object

```
private static JSONObject getTransactionInfo(String price) throws JSONException {
  JSONObject transactionInfo = new JSONObject();
  transactionInfo.put("totalPrice", price);
  transactionInfo.put("totalPriceStatus", "FINAL");
  transactionInfo.put("countryCode", Constants.COUNTRY_CODE);
  transactionInfo.put("currencyCode", Constants.CURRENCY_CODE);

  return transactionInfo;
```

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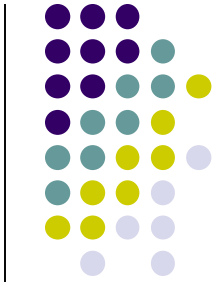
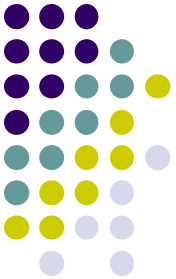


```
public static Optional<JSONObject> getPaymentDataRequest(String price) {
    try {
      JSONObject paymentDataRequest = PaymentsUtil.getBaseRequest();
      paymentDataRequest.put(
          "allowedPaymentMethods", new JSONArray().put(PaymentsUtil.getCardPaymentMethod()));
      paymentDataRequest.put("transactionInfo", PaymentsUtil.getTransactionInfo(price));
      paymentDataRequest.put("merchantInfo", PaymentsUtil.getMerchantInfo());

      /* An optional shipping address requirement is a top-level property of the
PaymentDataRequest
      JSON object. */
      paymentDataRequest.put("shippingAddressRequired", true);

      JSONObject shippingAddressParameters = new JSONObject();
      shippingAddressParameters.put("phoneNumberRequired", false);

      JSONArray allowedCountryCodes = new JSONArray(Constants.SHIPPING_SUPPORTED_COUNTRIES);

      shippingAddressParameters.put("allowedCountryCodes", allowedCountryCodes);
      paymentDataRequest.put("shippingAddressParameters", shippingAddressParameters);
      return Optional.of(paymentDataRequest);
    } catch (JSONException e) {
      return Optional.empty();
    }
```

G Pay

Code

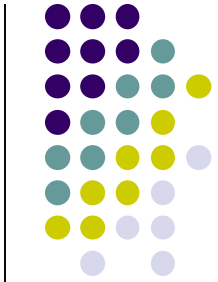


8. Register event handler for user gesture

```
mGooglePayButton.setOnClickListener(
        new View.OnClickListener() {
          @Override
          public void onClick(View view) {
            requestPayment(view);
          }
        });
```

9. Handle the response object

Pay



```
public void onActivityResult(int requestCode, int resultCode, Intent data) {
    switch (requestCode) {
        // value passed in AutoResolveHelper
      case LOAD_PAYMENT_DATA_REQUEST_CODE:
        switch (resultCode) {
          case Activity.RESULT_OK:
            PaymentData paymentData = PaymentData.getFromIntent(data);
            handlePaymentSuccess(paymentData);
            break;
          case Activity.RESULT_CANCELED:
            // Nothing to here normally - the user simply cancelled without selecting a
            // payment method.
            break;
          case AutoResolveHelper.RESULT_ERROR:
            Status status = AutoResolveHelper.getStatusFromIntent(data);
            handleError(status.getStatusCode());
            break;
          default:
            // Do nothing.
        }

        // Re-enables the Google Pay payment button.
        mGooglePayButton.setClickable(true);
        break;
    }
  }
```

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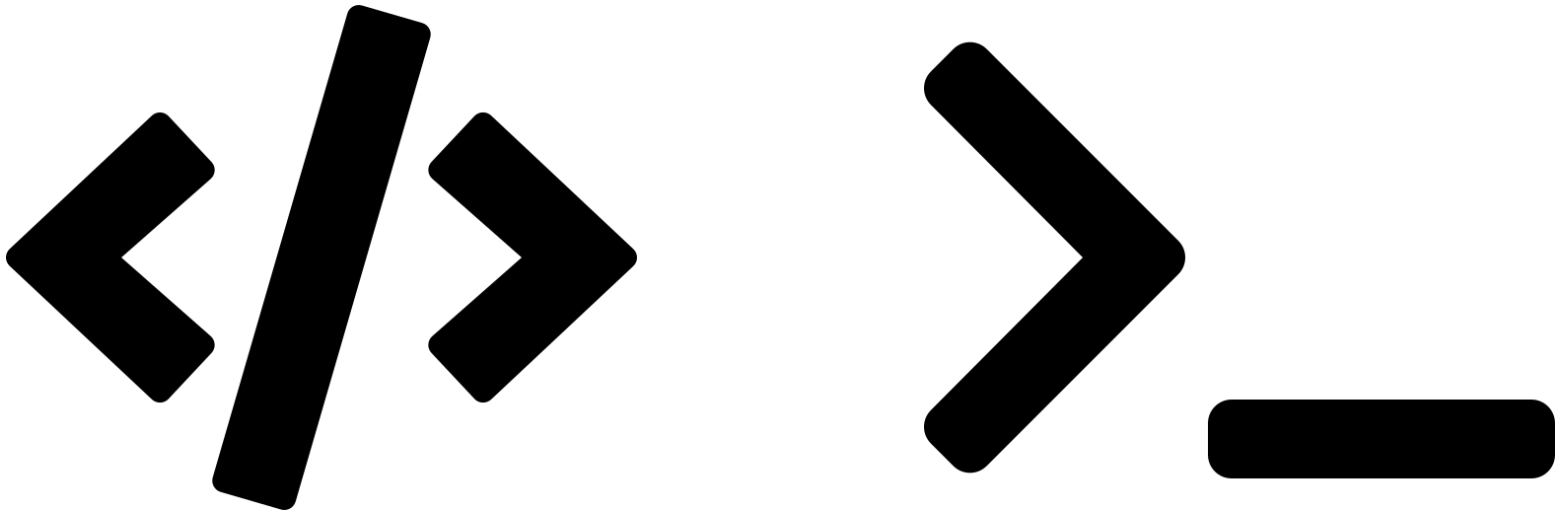
Compile and Run



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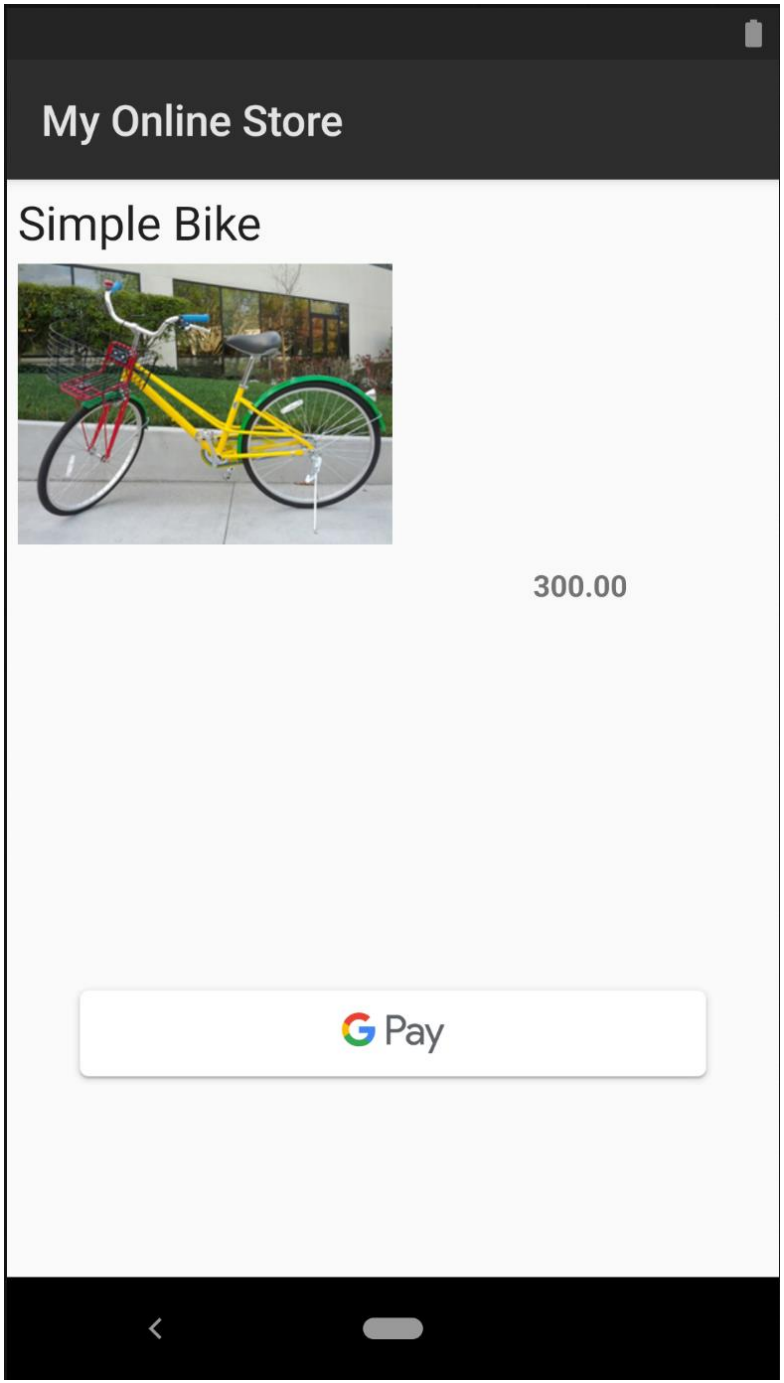
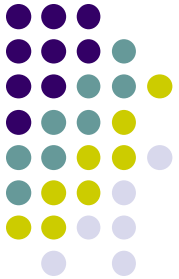

My Online Store
Simple Bike
300.00
Pay



Questions?

G Pay

References

- https://developers.google.com/pay/api/android/overview
- https://support.google.com/pay/merchants/answer/6288977?hl=en&ref_topic=7105427

Pay