

# Carton Caps API

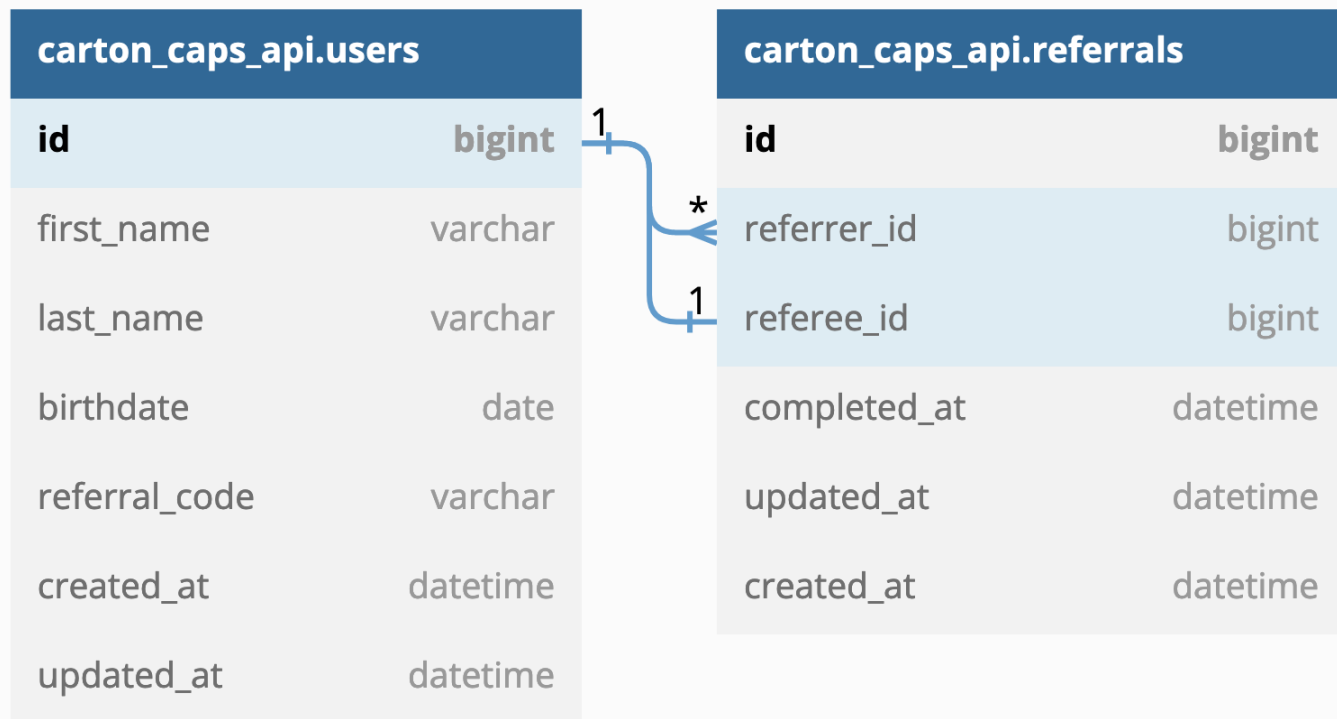
Solutions Architect Challenge

Refer-a-Friend / Deferred Deep Links

Solution by:

**Sean Ephraim**

## Entity-Relationship Diagram (ERD)



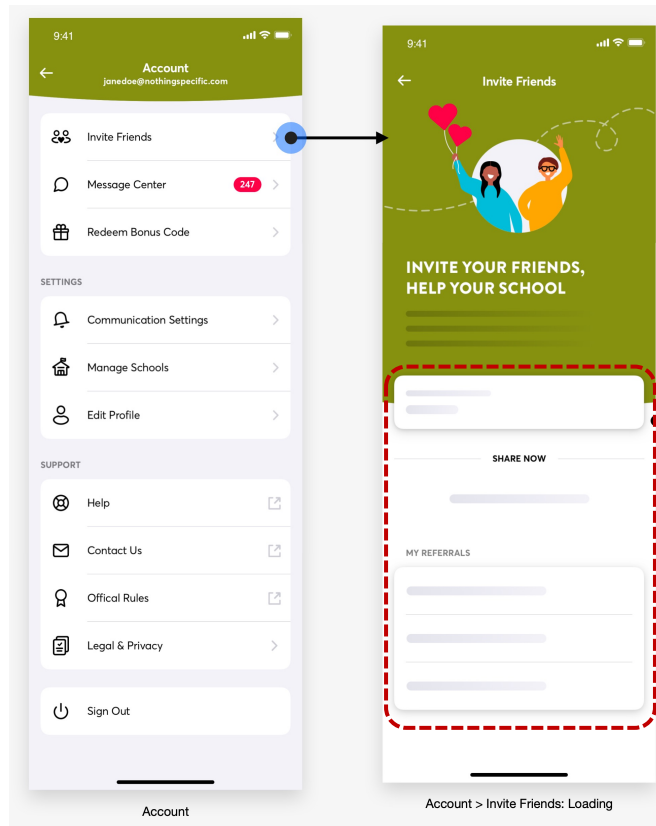
Referrer shares  
their unique  
referral code /  
deferred deep link  
from app

# Referring from Carton Caps

# Referrer Account

## Invite Friends

1. Clicking on "Invite Friends" will bring you to the referrals page
2. On page load, an API request to **GET /api/v1/users/:id/referees** will be made in order to fetch the user's referral code and referees
3. A successful response with **HTTP status code 200 (OK)** will be returned
4. The body of the response will contain the user's profile information (including their own referral code) and an array of referees for completed referrals (or an empty array if they don't have any)



### Request

GET /api/v1/users/:id/referees

### Response (JSON)

HTTP 200 (OK)

```
{
  "referrer": {
    "id": 612,
    "first_name": "Jane",
    "last_name": "Doe",
    "birthdate": "1983-01-01",
    "zip_code": 55112,
    "referral_code": "XY7G4D",
    "links": {
      "self": "https://cartoncaps.com/api/v1/users/612",
      "referrals": {
        "referred_by": "https://cartoncaps.com/api/v1/users/612/referrer",
        "referees": "https://cartoncaps.com/api/v1/users/612/referees"
      }
    }
  },
  "referees": [
    {
      "id": 651,
      "first_name": "Jenny",
      "last_name": "Simpson",
      "birthdate": "1982-05-12",
      "zip_code": 55417,
      "referral_code": "R2D2SW",
      "links": {
        "self": "http:// https://cartoncaps.com/api/v1/users/651",
        "referrals": {
          "referred_by": "https://cartoncaps.com/api/v1/users/651/referrer",
          "referees": "https://cartoncaps.com/api/v1/users/651/referees"
        }
      }
    },
    .
    .
  ]
}
```

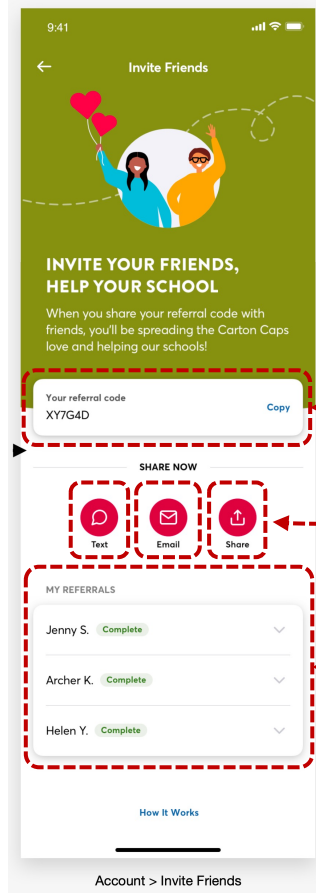
# Referrer Account

## Invite Friends

**Scenario #1: User has completed referrals (but has not reached the max)**

On page load, the API response will be used to populate:

- User's referral code field
- User's referral code within the default text that's used when sharing via Text, Email, and/or the Share Sheet
- User's completed referrals (referees)



## Request

GET /api/v1/users/:id/referees

## Response (JSON)

HTTP 200 (OK)

```
{
  "referrer": {
    "id": 612,
    "first_name": "Jane",
    "last_name": "Doe",
    "birthdate": "1983-01-01",
    "zip_code": 55112,
    "referral_code": "XY7G4D",
    "links": {
      "self": "https://cartoncaps.com/api/v1/users/612",
      "referrals": {
        "referred_by": "https://cartoncaps.com/api/v1/users/612/referrer",
        "referees": "https://cartoncaps.com/api/v1/users/612/referees"
      }
    }
  },
  "referees": [
    {
      "id": 651,
      "first_name": "Jenny",
      "last_name": "Simpson",
      "birthdate": "1982-05-12",
      "zip_code": 55417,
      "referral_code": "R2D2SW",
      "links": {
        "self": "http:// https://cartoncaps.com/api/v1/users/651",
        "referrals": {
          "referred_by": "https://cartoncaps.com/api/v1/users/651/referrer",
          "referees": "https://cartoncaps.com/api/v1/users/651/referees"
        }
      }
    },
    .
    .
    .
  ]
}
```

# Referrer Account

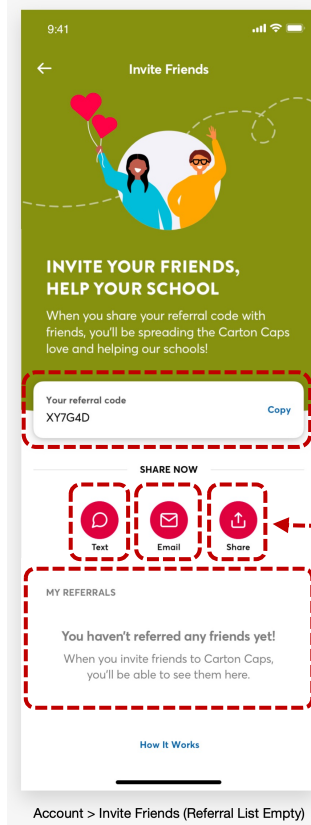
## Invite Friends

### Scenario #2: User has no completed referrals

On page load, the API response will be used to populate:

- User's referral code field
- User's referral code within the default text that's used when sharing via Text, Email, and/or the Share Sheet

The mobile app will display a message (i.e. "You haven't referred any friends yet") where completed referrals (referees) would normally be listed



## Request

GET /api/v1/users/:id/referees

## Response (JSON)

HTTP 200 (OK)

```
{
  "referrer": {
    "id": 612,
    "first_name": "Jane",
    "last_name": "Doe",
    "birthdate": "1983-01-01",
    "zip_code": 55112,
    "referral_code": "XY7G4D",
    "links": {
      "self": "https://cartoncaps.com/api/v1/users/612",
      "referrals": {
        "referred_by": "https://cartoncaps.com/api/v1/users/612/referrer",
        "referees": "https://cartoncaps.com/api/v1/users/612/referees"
      }
    }
  },
  "referees": []
}
```

# Referrer Account

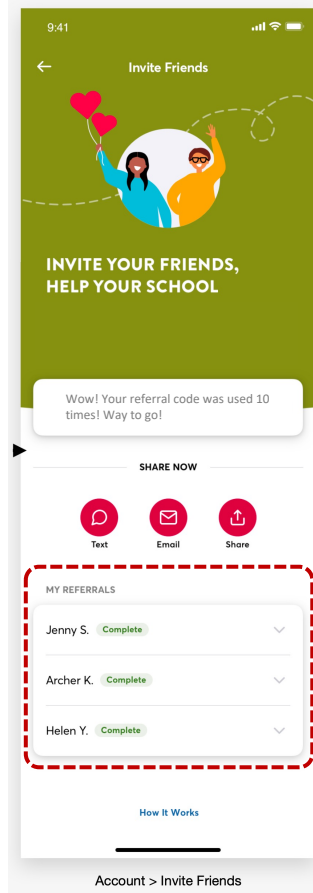
## Invite Friends

### Scenario #3: User has reached the maximum number of referrals

On page load, the API response will be used to populate:

- User's completed referrals (referees)

The user's referral code will be hidden with no option to "Copy" it. Users can still invite friends with the "Text"/"Email"/"Share" buttons, but their referral code will be omitted from the default text.



## Request

GET /api/v1/users/:id/referees

## Response (JSON)

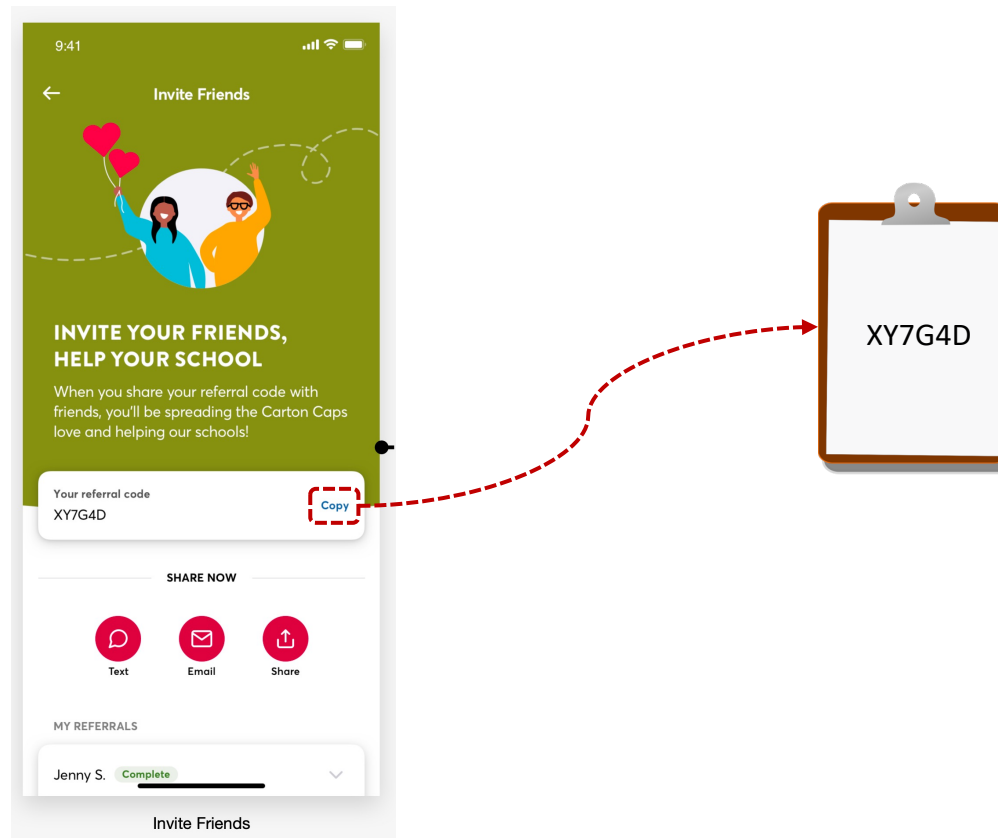
HTTP 200 (OK)

```
{
  "referrer": {
    "id": 612,
    "first_name": "Jane",
    "last_name": "Doe",
    "birthdate": "1983-01-01",
    "zip_code": 55112,
    "referral_code": "XY7G4D",
    "links": {
      "self": "https://cartoncaps.com/api/v1/users/612",
      "referrals": {
        "referred_by": "https://cartoncaps.com/api/v1/users/612/referrer",
        "referees": "https://cartoncaps.com/api/v1/users/612/referees"
      }
    }
  },
  "referees": [
    {
      "id": 651,
      "first_name": "Jenny",
      "last_name": "Simpson",
      "birthdate": "1982-05-12",
      "zip_code": 55417,
      "referral_code": "R2D2SW",
      "links": {
        "self": "http:// https://cartoncaps.com/api/v1/users/651",
        "referrals": {
          "referred_by": "https://cartoncaps.com/api/v1/users/651/referrer",
          "referees": "https://cartoncaps.com/api/v1/users/651/referees"
        }
      }
    },
    .
    .
    .
  ]
}
```

# Referrer Account

Invite Friends

**Scenarios #1 and #2: User has completed referrals (but has not reached the max) or no referrals at all**  
Clicking “Copy” will copy the referral code to the clipboard



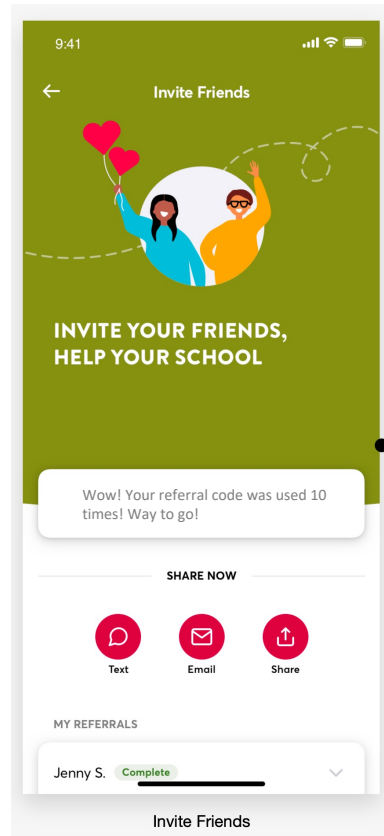


# Referrer Account

Invite Friends

**Scenario #3: User has reached the maximum number of referrals**

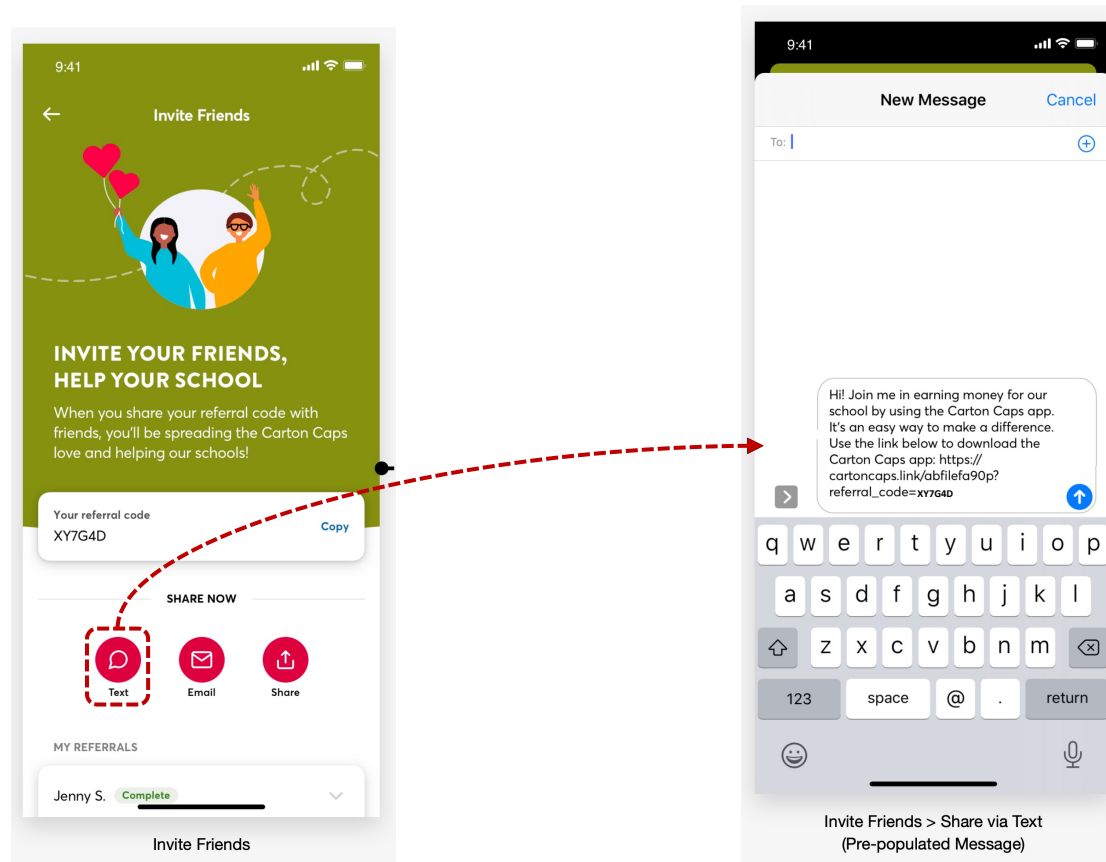
User's referral code will be hidden and the option to "Copy" it will no longer be available



# Referrer Account

## Invite Friends

**Scenarios #1 and #2: User has completed referrals (but has not reached the max) or no referrals at all**  
Clicking the “Text” button will bring up a new text message prompt with a pre-populated message that includes the user’s referral code

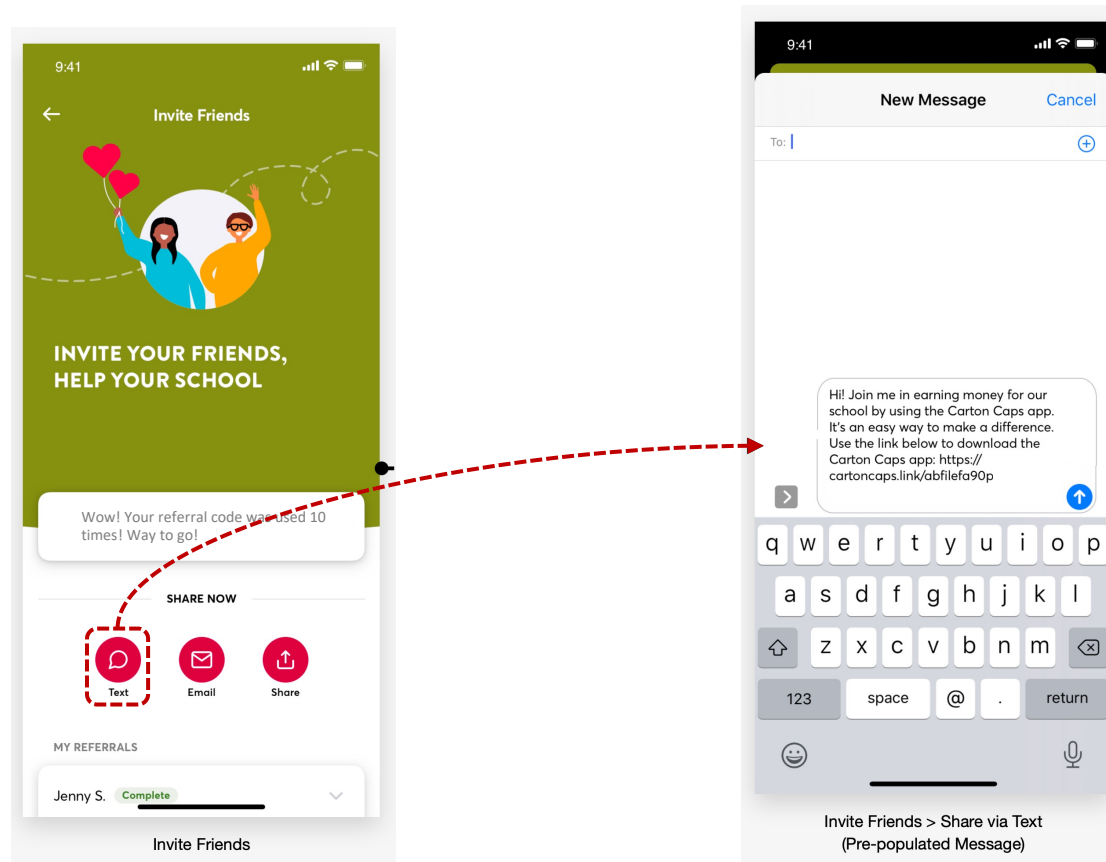


# Referrer Account

## Invite Friends

**Scenario #3: User has reached the maximum number of referrals**

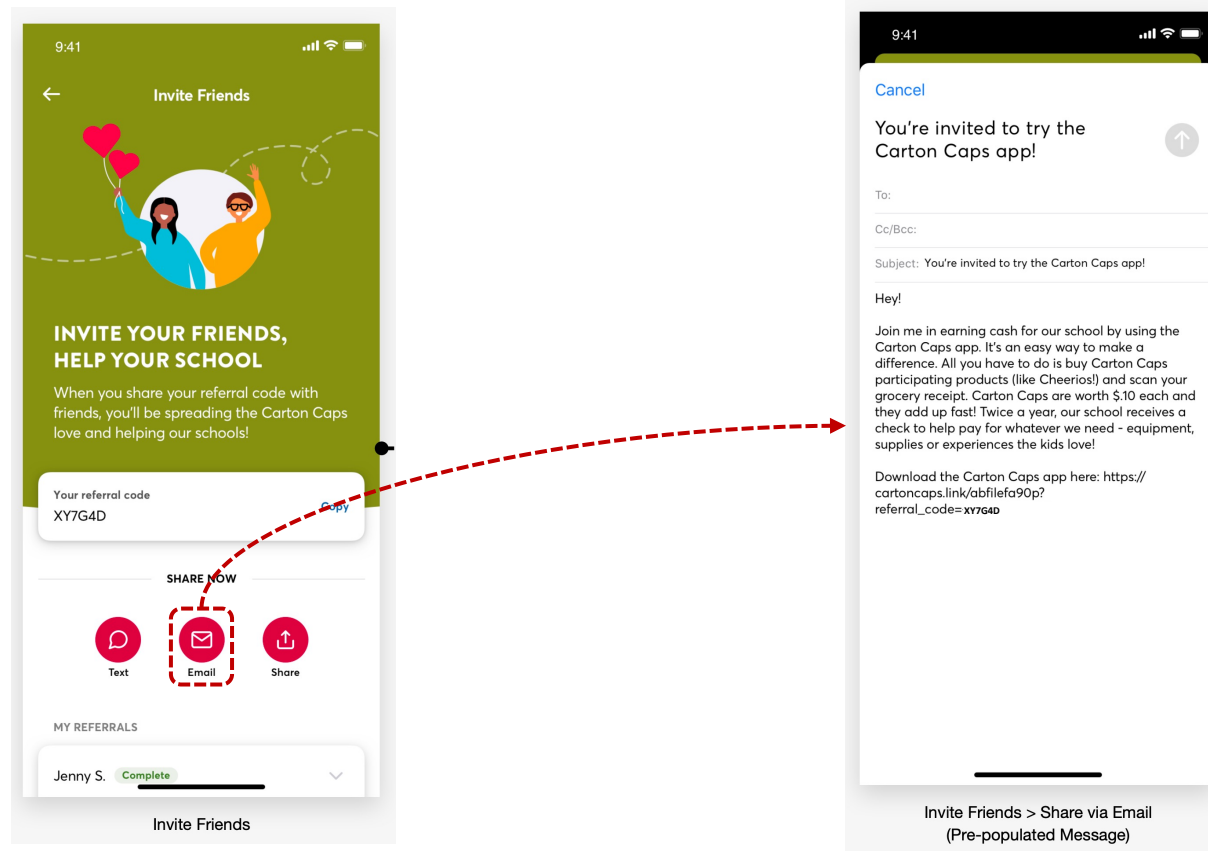
Clicking the “Text” button will bring up a new text message prompt with a pre-populated message that does not include the user’s referral code



# Referrer Account

## Invite Friends

**Scenarios #1 and #2: User has completed referrals (but has not reached the max) or no referrals at all**  
Clicking the “Email” button will bring up a new email prompt with a pre-populated message that includes the user’s referral code

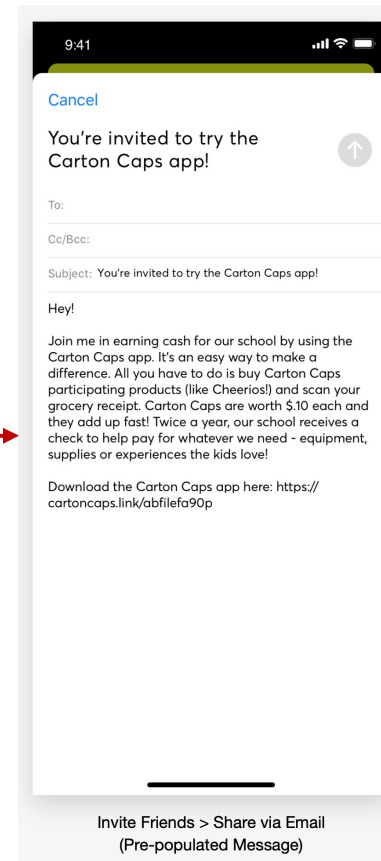
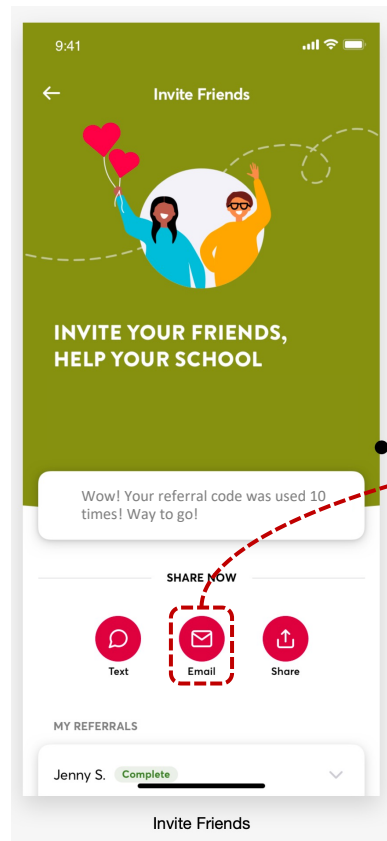


# Referrer Account

## Invite Friends

### Scenario #3: User has reached the maximum number of referrals

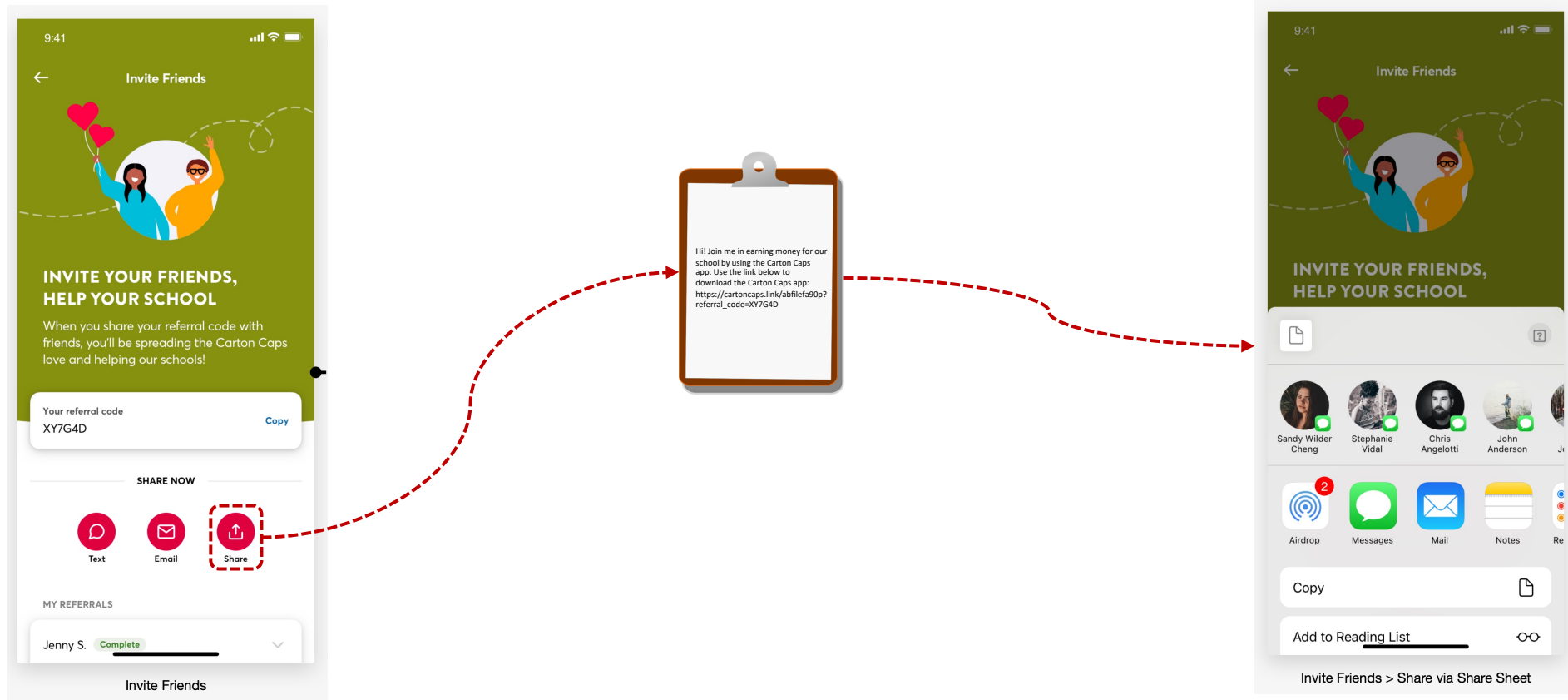
Clicking the “Email” button will bring up a new email prompt with a pre-populated message that does not include the user’s referral code



# Referrer Account

## Invite Friends

**Scenarios #1 and #2: User has completed referrals (but has not reached the max) or no referrals at all**  
Clicking the “Share” button will copy the default text (including the user’s referral code) to the clipboard and bring up the Share Sheet

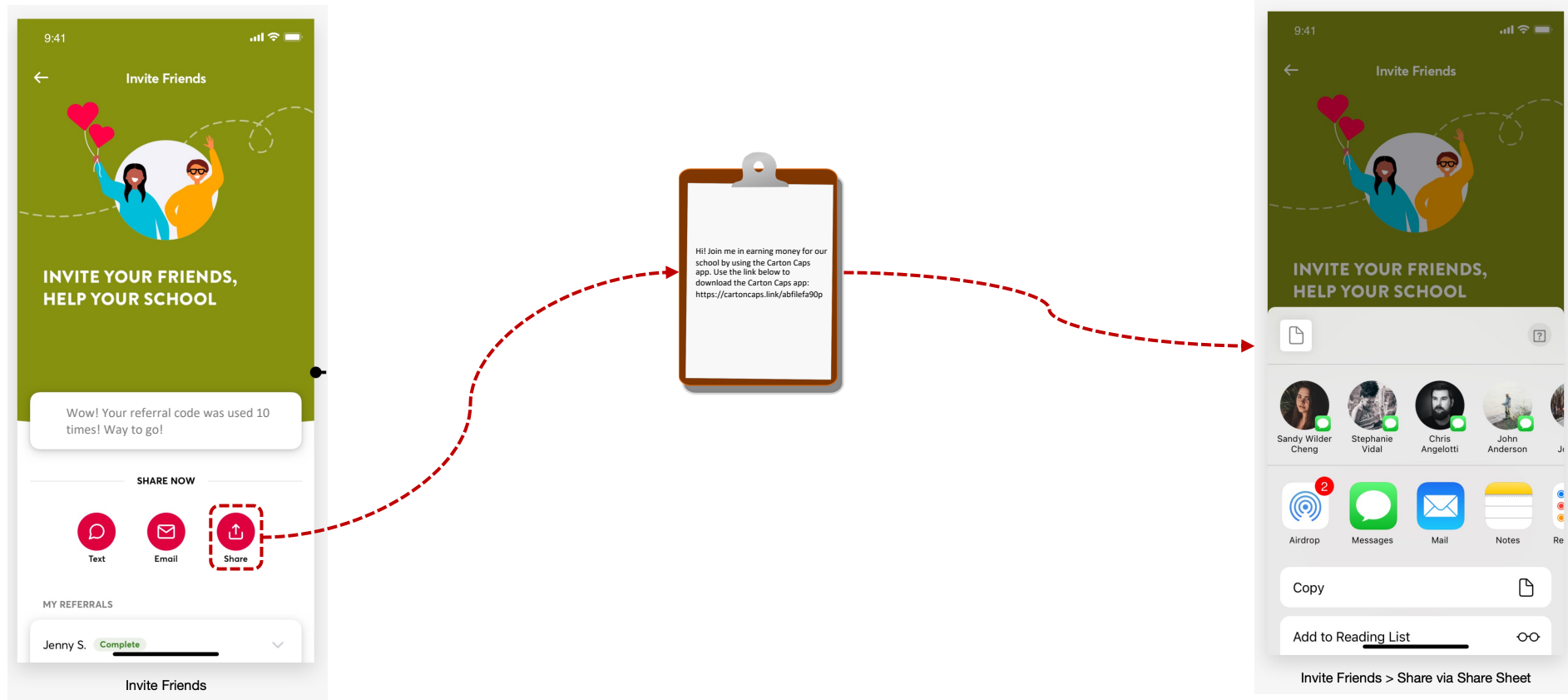


# Referrer Account

## Invite Friends

### Scenario #3: User has reached the maximum number of referrals

Clicking the “Share” button will copy the default text (without the user’s referral code) to the clipboard and bring up the Share Sheet



Referee taps a link  
within a text  
message sent by  
referrer

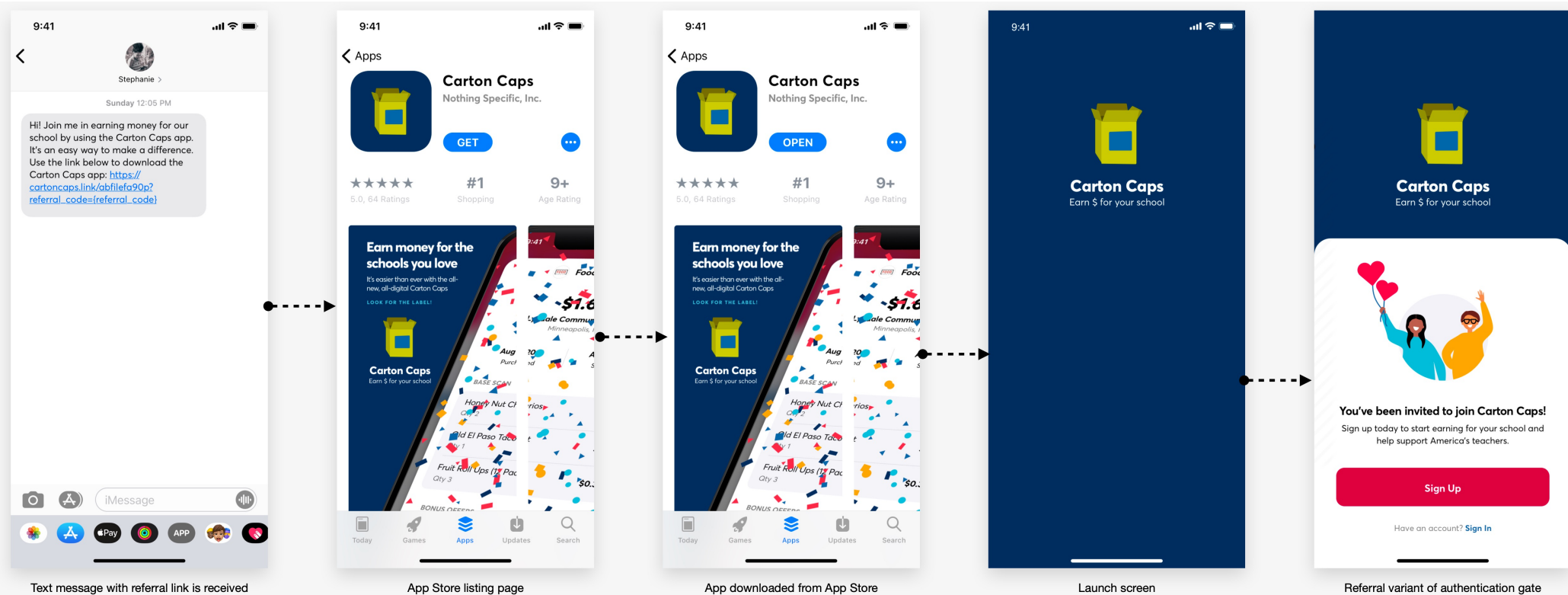
# Referred to Carton Caps



# Referee Account

Referred with a link

- If the deferred deep link contains a `?referral_code=` query string then the user will be presented with the invitational sign-up screen



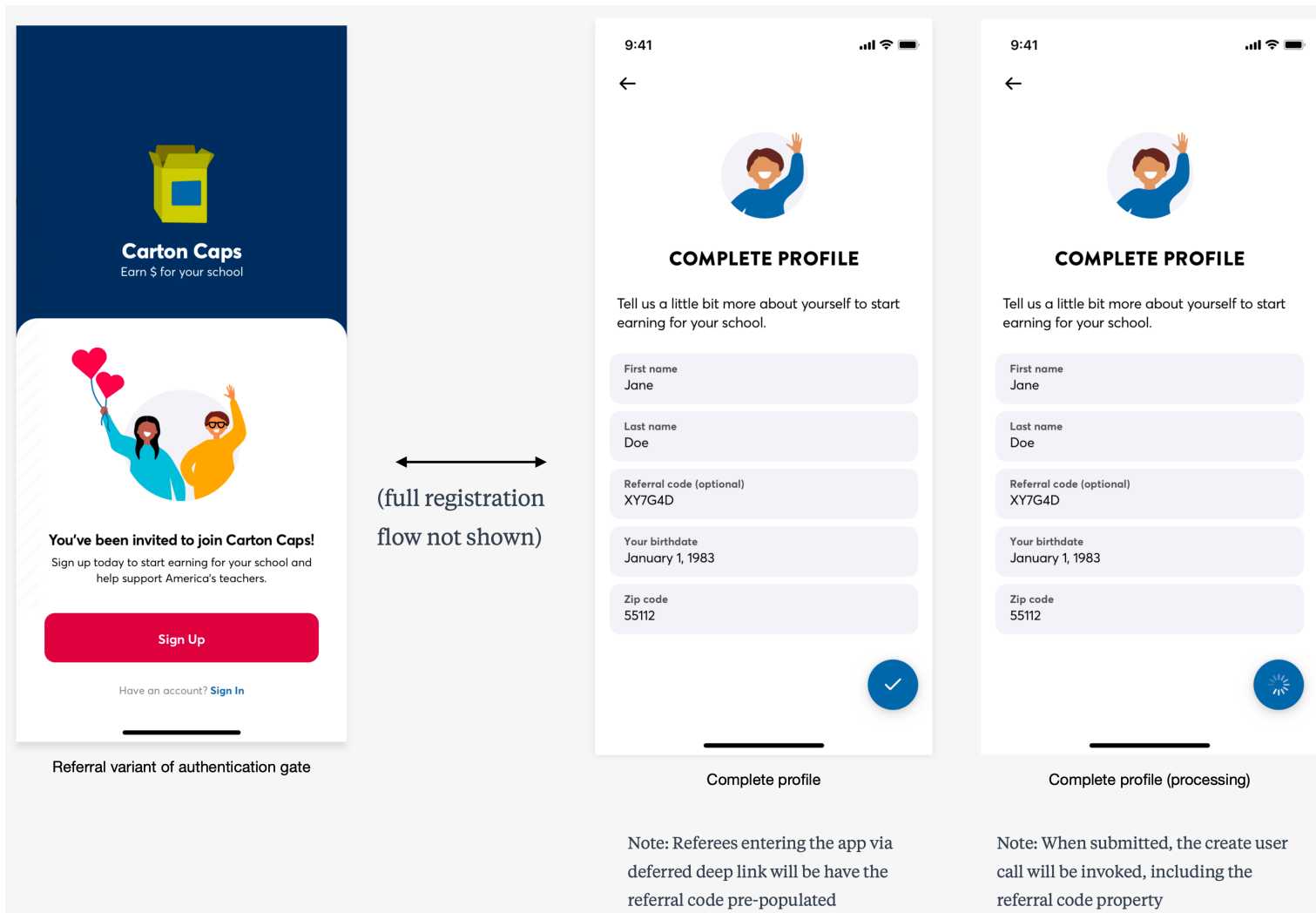
Note: Upon launch, the app will invoke the deferred deep link provider to determine if the user was referred.

Note: Using the routing information within the deferred deep link, the user will be presented with the referral variation of the gate screen.

# Referee Account

Referred with a link

- The user will proceed with the signup process
- The referral code will be pre-populated (using the deferred deep link's `?referral_code=` query string)



# Referee Account


Referred with a link

## Scenario #1: **SUCCESSFUL** user creation with a valid referral code

1. Upon form submission, an API request to **POST /api/v1/users/** will be made in order to create the new user and referral
2. A successful response with **HTTP status code 201 (Created)** will be returned
3. The body of the response will contain the new user's profile information

9:41

←



**COMPLETE PROFILE**

Tell us a little bit more about yourself to start earning for your school.


First name  
Jane

Last name  
Doe

Referral code (optional)  
XY7G4D

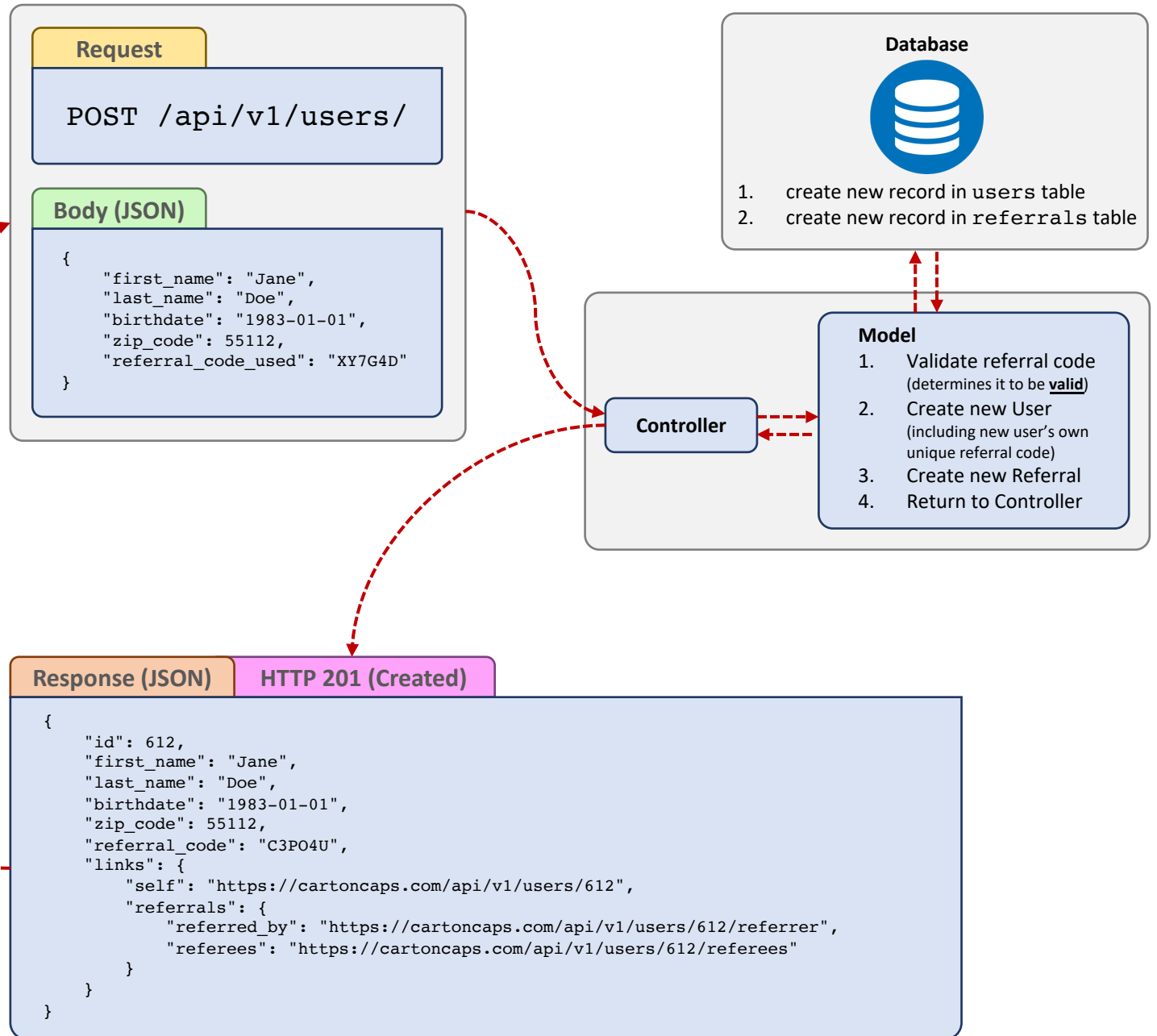
Your birthdate  
January 1, 1983

Zip code  
55112



Complete profile (processing)

Note: When submitted, the create user call will be invoked, including the referral code property



Referred with a link

### Scenario #2: **FAILED** user creation due to invalid referral code

- 9:41

←

COMPLETE PROFILE

Tell us a little bit more about yourself to start earning for your school.

First name

Jane

Last name

Doe

Referral code (optional)

OOOOPS

Your birthdate

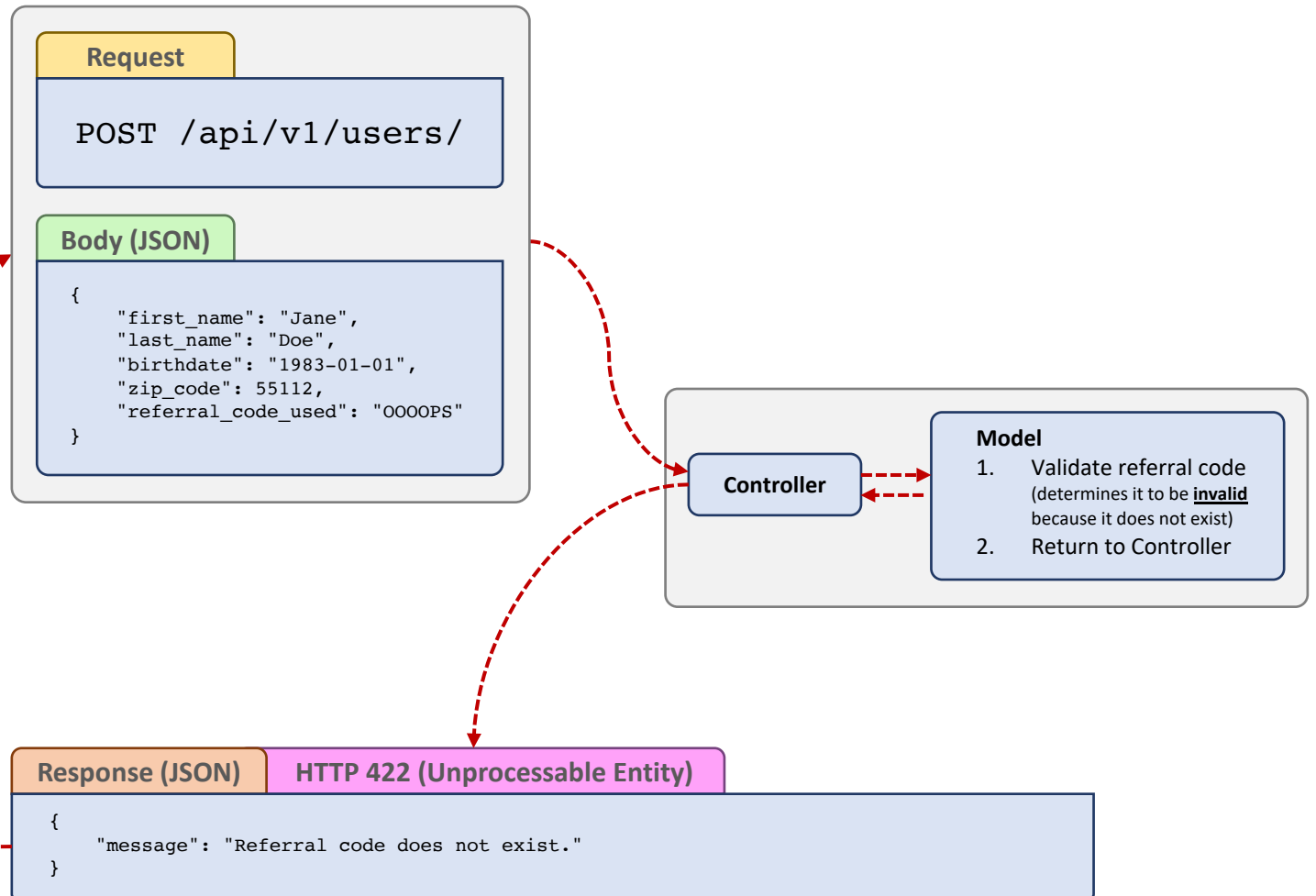
January 1, 1983

Zip code

55112

Complete profile (processing)

Note: When submitted, the create user call will be invoked, including the referral code property



# Referee Account


Referred with a link

### Scenario #3: **FAILED** user creation due to max referrals already reached

1. Upon form submission, an API request to **POST /api/v1/users/** will be made in order to create the new user and referral
2. An unsuccessful response with **HTTP status code 422 (Unprocessable Entity)** will be returned due to referral code already being redeemed the maximum number of times.
3. The body of the response will contain an error message indicating why it failed, i.e. *"Referral code has already reached maximum number of uses."*
4. The mobile app will prompt the user with a message that the referral code has reached its maximum number of uses

9:41

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## COMPLETE PROFILE

Tell us a little bit more about yourself to start earning for your school.


First name  
Jane

Last name  
Doe

Referral code (optional)  
XY7G4D

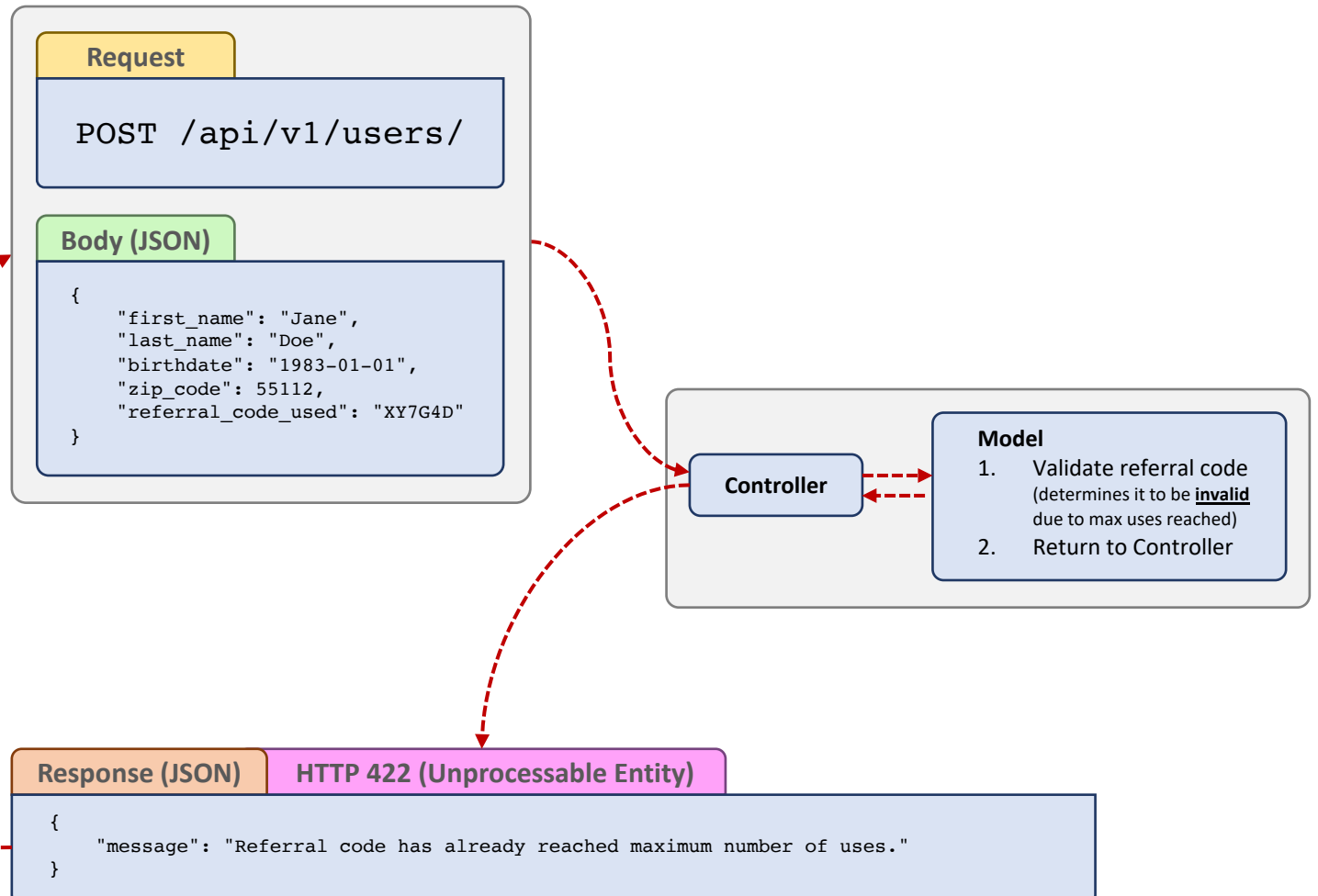
Your birthdate  
January 1, 1983

Zip code  
55112



Complete profile (processing)

Note: When submitted, the create user call will be invoked, including the referral code property



# Referee Account


Referred with a link

## Scenario #4: **SUCCESSFUL** user creation without a referral code

1. Upon form submission, an API request to **POST /api/v1/users/** will be made in order to create the new user and referral
2. A successful response with **HTTP status code 201 (Created)** will be returned
3. The body of the response will contain the new user's profile information

9:41

←



**COMPLETE PROFILE**

Tell us a little bit more about yourself to start earning for your school.

First name

Jane

Last name

Doe


Referral code (optional)

Your birthdate

January 1, 1983

Zip code

55112



Complete profile (processing)

Note: When submitted, the create user call will be invoked

