NFC Wristband ID

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Intro to NFC

- NFC stand for Near-Field Communication. It is a method of communication that allows technologies that are close enough to each other to communicate without using the internet. This is a system that is convenient, and fast.

- NFC communication is useful for contactless payment, sharing of social media, and other information

- During CoVid-19 there has been an upsurge in the use of contactless payment

Methods of NFC

- Tag reader
  - Connects applications with real world scenarios
- Peer to Peer
  - Connects devices by being physically close and can work both ways
- Emulation
  - Connects to a common infrastructure such as a wallet

The Idea Behind the Project

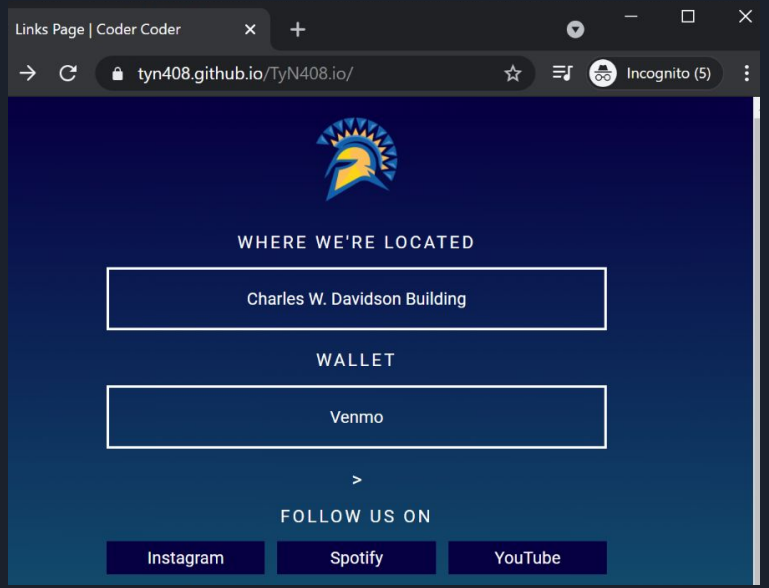
- Minimizing the amount of things we need to carry around
  - If you could mitigate the load you carry for the day, why wouldn't you?

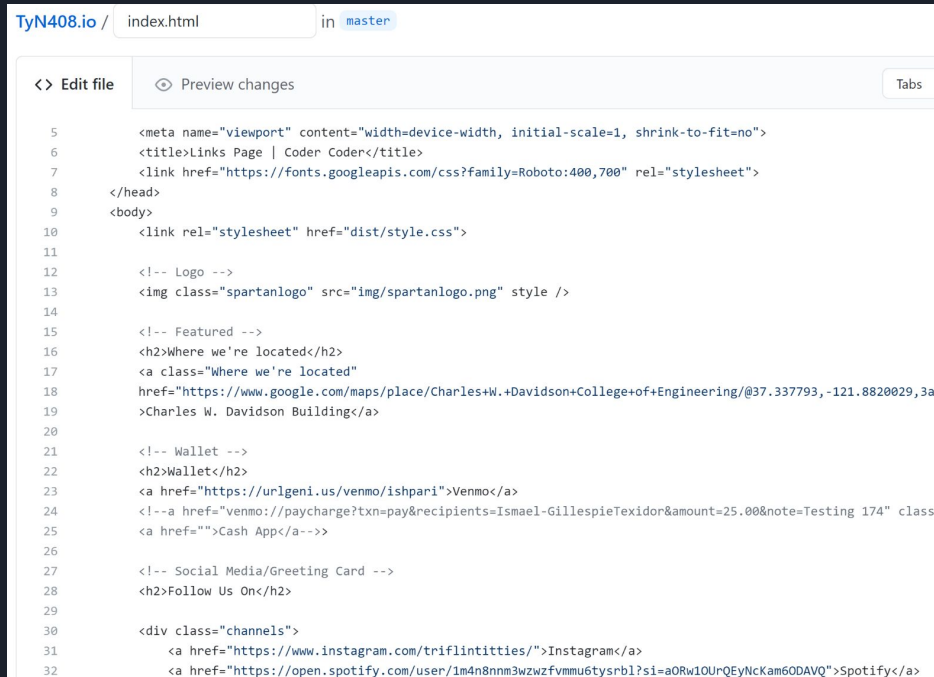
- Create a seamless way to connect with peers
  - An NFC encapsulated wristband can carry most items you'd usually carry in your wallet

- NFC tags can store and transmit information
  - Scanning the wristband will bring up a user's linked social Media Accounts and whatever else they wish to share
    - Connect through apps like: Venmo, Spotify, Instagram, LinkedIn, etc.

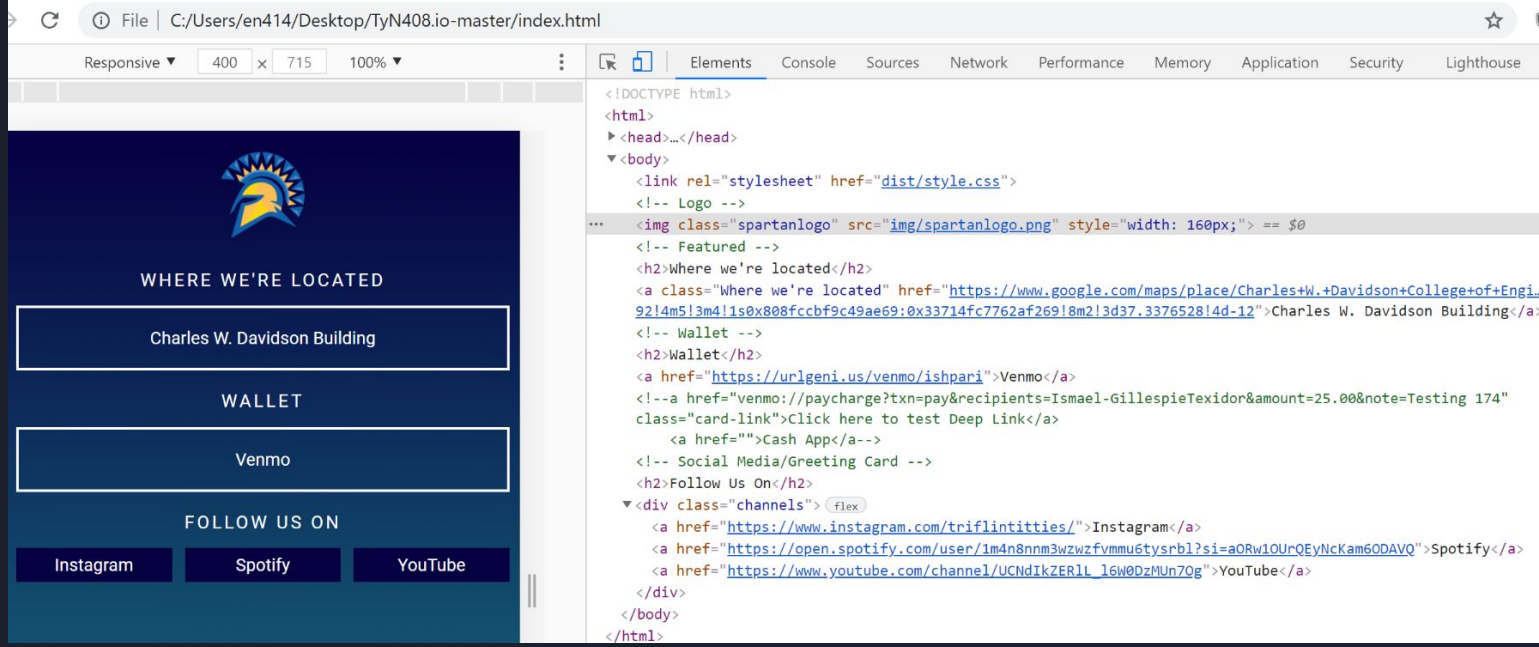
How was it done?

- Design a web page with links to all online information wished to be shared
  - Creating *Deeplinks*, where users are led directly to specific in-app locations
- Host a Static Website using GitHub
  - Adjust the HTML/SCSS file directly and write the static website onto the NFC
- Write the host website onto NFC tag





Host Webpage
(during development)



Portion of our SCSS file to
adjust style of webpage

```
    box-sizing: border-box;
    font-size: 100%;
}

*, *:before, *:after {
    box-sizing: inherit;
}

body {
    background-color: #0055A2;
    background-image: -webkit-gradient(linear,left top,left bottom,color-stop(2%,#0055A2),color-stop(108%,#E5A823));
    background-image: linear-gradient(#0055A2 2%,#E5A823 108%);
    color: #ffffff;
    min-height: 100vh;
    text-align: center;
    font-family: 'Roboto', sans-serif;
```

Video Example of our NFC Virtual Wallet ID

Potential Improvements

- Add layers of Web design Security
  - Add HTTPS and SSL
  - Use a secure Web Host
  - Back up our Website

- Build and utilize our own domain
  - Eliminates the need for a Web Host

“Dreams to Fruition”

How can we go from a product Idea to a profitable product Brand?

2 Tiers of Branding to Pursue

1st Tier: Small Scale / Easier

- Purchase Item and Set Up through Interface like Linktree
- User programs the product themselves
- Cheapest Option
- Legal Parameters because of Information Safety Issues

2nd Tier: Larger Scale / Most Difficult

- Need to Commision Web Developers
- Legal Paperwork and Applications
- Expensive

HTML Website Attempt

```
async function readTag() {
  if ("NDEFReader" in window) {
    const reader = new NDEFReader();
    try {
      await reader.scan();
      reader.onreading = event => {
        const decoder = new TextDecoder();
        for (const record of event.message.records) {
          consoleLog("Record type:  " + record.recordType);
          consoleLog("MIME type:    " + record.mediaType);
          consoleLog("=== data ===\n" + decoder.decode(record.data));
        }
      }
    } catch(error) {
      consoleLog(error);
    }
  } else {
    consoleLog("Web NFC is not supported.");
  }
}

async function writeTag() {
  if ("NDEFWriter" in window) {
    const writer = new NDEFWriter();
    try {
      await writer.write("helloworld");
      consoleLog("NDEF message written!");
    } catch(error) {
      consoleLog(error);
    }
  } else {
    consoleLog("Web NFC is not supported.");
  }
}
```

Manufacturer

COMPANY PROFILE

Founded in 2001, Shenzhen Zhengdafei Smart Card Co., Ltd. specializes in manufacturing of RFID cards, RFID inlay prelam, contactless smart card, contact IC card, ID card, business cards, hotel key card, membership cards, white blank printable cards, tags, etc.

Manufacturer Offerings

Place of Origin:	China	Brand Name:	ZDF/customized
Product name:	RFID wristband	Material:	Silicone
Size:	diameter 45~74mm or custom	Color:	blue, red, black, white, yellow or Customized
Craft:	color/logo/number printings, etc	Printing:	Silkscreen printing/laser printing
Type:	smart plastic rfid bracelet	working temperatur...	-80°C~250°C
Application:	Access Control System	Frequency:	LF, HF and UHF

Material	Silicone RFID smart Bracelet/Wristband
Dimensions:	Ring's diameter--65mm,74mm, 45mm is optional; bandwidth: 14mm
Color:	blue, red, black, white, yellow, grey, green, pink, etc. or on request
Chip Available:	LF (125KHz): EM4100,EM4200,TK4100,T5577,Hitag 1,Hitag 2 etc.
	HF (13.56MHz): S50, S70,Ultralight,I-CODE2,TI2048 etc.
	UHF (860 ~ 960MHz): UCODE GEN2,ALIEN H3 etc.
Wristband Features:	Close-type watchband, elastic, easy to wear and use, waterproof, moisture proof, shockproof, and resistant to high temperature
	Working temperature: -80°C~250°C,Constancy of properties over a wide temperature range
	Acid-proof, Alkali-proof ,Excellent resistance to oxygen, ozone and sunlight, Low chemical reactivity

More Info on Chips Offered

LF(125KHz)

Low frequency (LF) 125 kHz RFID readers interrogate RFID tags at a close proximity, with a read range of up to 10cm (some special readers may read tags from an extended distance of up to 1m). Due to the LF 125 kHz frequency's lower sensitivity to radio wave interference, these readers are often used in configurations where metal and water are present.

HF (13.56MHz)

PCB/FR4 RFID Tags HF 13.56 MHz offer a low profile and are designed to be applied to assets,servers,pallets or attachment to rigid item,and are adept in surviving high temperature RFID applications. Available with ISO 15693 or 14443 NFC memory chips.

Cost

- Minimum Order Quantity of 500,000 at approximately 44 cents each for Customization

  500,000 x $0.44= $220,000

- Web Design

  Price ranges in Hundreds of Thousands with Licensing and Legal Documents

Total

- Approximately $300,000 to $400,000 Minimum

Sell Each Item for 10 to 20 Dollars will have return of over **500%**