

Def Hackathon 2019: Even The Credit Score

Team:

404- Not Found

Gregor Richardson, Ishita Bhandari, Prakirn Kumar

“We offer a comprehensive service to empower users to view a transparent and distributed credit information.

We do this with an innovative credit score system and a Chrome plugin to present loan opportunities through Even's API.”

User Journey

Cart Page

- The user selects the desired products and goes to the cart.
- Our Chrome plugin displays 'Check for Score' and 'Apply for Loan' options before checking out.

Amazon.com Shopping Cart

amazon.com/gp/cart/view.html?ref_=nav_cart

Amazon Associates SiteStripe Get Link: Text Image Text+Image Native Shopping Ads (New) Share: f t

Tried the foreign bank direct deposit yet? Learn more

Earnings Help

amazon Try Prime

Browsing History Gregor's Amazon.com Today's Deals Gift Cards Whole Foods Registry Sell Help EN Hello, Gregor Account & Lists Orders Try Prime Cart

Gregor, get a **\$50 Amazon.com Gift Card instantly** upon approval for the **Amazon Rewards Visa Card**

Current Total: **\$ 26.52**
Savings: **- \$ 50.00**

Cost After Savings: **\$ 0.00**
Savings Remaining: **\$ 23.48**

Your order qualifies for FREE Shipping. Choose this option at checkout. See details

Subtotal (3 items): \$26.52
 This order contains a gift

Check Your Score

or

Sign in to turn on 1-Click ordering.

Shopping Cart

	Price	Quantity
 Becoming by Michelle Obama Hardcover In Stock Eligible for FREE Shipping <input type="checkbox"/> This is a gift Learn more	\$13.89	1 <input type="button" value="▼"/>
 I Love You, Funny Bunny by Zondervan Board book Usually ships within 1 to 3 weeks Eligible for FREE Shipping <input type="checkbox"/> This is a gift Learn more	\$4.49	1 <input type="button" value="▼"/>
 Little Blue Truck's Springtime by Alice Schertle Board book In Stock Eligible for FREE Shipping <input type="checkbox"/> This is a gift Learn more	\$8.14	1 <input type="button" value="▼"/>

Subtotal (3 items): \$26.52

Sponsored Products related to items in your cart


The Easter Surprise... by Jennifer Churchman
★★★★★ 10
Hardcover
\$11.37 
[See all buying options](#)


Little Duck: Finger Puppet Book by Chronicle Books
★★★★★ 60
Board book
\$4.42 
[See all buying options](#)


Little Bunny: Finger Puppet Book by Chronicle Books
★★★★★ 60
Board book
\$4.42 
[See all buying options](#)

Check your Score

- The user can check their Even's Credit Score using the 'Check your Score' button.

Amazon.com Shopping Cart + ↗

amazon.com/gp/cart/view.html?ref=_nav_cart

Amazon Associates SiteStripe Get Link: Text Image Text+Image Native Shopping Ads (New) Custom Share: [f](#) [t](#) Tried the foreign bank direct deposit yet? [Learn more](#)

Earnings Help

amazon Try Prime All 🔍

Browsing History ▼ Gregor's Amazon.com Today's Deals Gift Cards Whole Foods Registry Sell Help EN Hello, Gregor Account & Lists ▼ Orders Try Prime ▼ 3 Cart

 Gregor, get a **\$50 Amazon.com Gift Card** instantly upon approval for the **Amazon Rewards Visa Card**

Current Total: \$ 26.52
Savings: -\$ 50.00 Apply now
Cost After Savings: \$ 0.00
Savings Remaining: \$ 23.48

Your order qualifies for **FREE Shipping**. Choose this option at checkout. [See details](#)

Subtotal (3 items): \$26.52
 This order contains a gift

Proceed to checkout Check Your Score Apply For Loan

[Sign in](#) to turn on 1-Click ordering.

Shopping Cart

	Price	Quantity
 Becoming by Michelle Obama Hardcover In Stock Eligible for FREE Shipping <input type="checkbox"/> This is a gift Learn more	\$13.89	→
 I Love You, Funny Bunny by Zondervan Board book Usually ships within 1 to 3 weeks Eligible for FREE Shipping <input type="checkbox"/> This is a gift Learn more	\$4.49	1 ▼
 Little Blue Truck's Springtime by Alice Schertle Board book In Stock Eligible for FREE Shipping <input type="checkbox"/> This is a gift Learn more	\$8.14	1 ▼

Subtotal (3 items): \$26.52

Sponsored Products related to items in your cart


The Easter Surprise... Jennifer Churchman ★★★★★ 10
Hardcover \$11.37 prime
[See all buying options](#)


Little Duck: Finger... Chronicle Books ★★★★★ 60
Board book \$4.42 prime
[See all buying options](#)


Little Bunny: Finger... Chronicle Books

Blockchain Integration

- Our blockchain ledger is managed by Blockstack which stores the nodes with each user's data.
- The data consists of parameters which are used to calculate the Even's Credit Score.

Blockstack: Even's Credit Score

Users

(Sign Out)

prakirn96.id.blockstack

Users node

Write a todo...

User 5
User 4
User 3
User 2
User 1

localhost:3333

Elements Console

Network Log XMLHttpRequests

Preserve log Eager evaluation

Selected context only Autocomplete from history

Group similar

[DEBUG] uploadToGaiaHub: webpack-internal:///:27:52 uploading todos.json to <https://hub.blockstack.org>

Failed to load resource: the server responded with a status of 404 (Not Found)

[DEBUG] uploadToGaiaHub: logger.js?2d60:52 uploading todos.json to <https://hub.blockstack.org>

> blockstack.getFile("todos.json", { decrypt: true })

< Promise {<pending>}

[{"id":5,"text":"User 5","completed":false}, {"id":4,"text":"User 4","completed":false}, {"id":3,"text":"User 3","completed":false}, {"id":2,"text":"User 2","completed":false}, {"id":1,"text":"User 1","completed":false}]

VM1869:1

Source code on GitHub

Even's Credit Score

- The pop-up shows the user's Even's Credit Score.
- The pop-up has options to 'See how it's calculated' or to go back.

A screenshot of an Amazon shopping cart page. At the top, there's a banner for "Shop Deals of the Day". Below it, the user's account information shows "Hello, Gregor" and "Cart" with 3 items. The main content area shows a shopping cart with three items: "BECOMING" by Michelle Obama, "I Love You, Funny Bunny" by Zondervan, and "Little Blue Truck's Springtime" by Alice Schertle. Each item has its title, author, price (\$4.49, \$8.14), quantity (1), and options like "Delete", "Save for later", and "Compare with similar items". Overlaid on the page is a dark blue pop-up window titled "Your Even's Credit Score". Inside, the score "72 - S" is displayed in large green letters. Below the score, it says "The most transparent and distributed credit scoring system." There are two buttons at the bottom of the pop-up: "Cancel" and "See how it's calculated". The URL in the browser address bar is <https://www.amazon.com/gp/cobrancard/marketing.html?ref=con321&inc=50gc&ts=505dm31ctsy6kbxihg036dnuzzf8qbp&plattr=CB50VC&place=vc&imp=d3c1540e-1847-4a58-a2df-3230bb6f19df>.

How it's Calculated

- The 'See how it's calculated' button directs to a dashboard displaying how the Even's Credit Score is calculated.

A screenshot of an Amazon shopping cart page. At the top, there's a banner for 'Native Shopping Ads'. Below it, the Amazon logo and 'Shop Deals of the Day' are visible. A red circle highlights the 'See how it's calculated' button in a modal window. A large yellow arrow points upwards from the bottom of the slide towards this button. The modal window has a dark background and contains the text 'Your Even's Credit Score' at the top, followed by a large green '72 - S', and the subtitle 'The most transparent and distributed credit scoring system.' Below this are 'Cancel' and 'See how it's calculated' buttons. The main shopping cart area shows three items: 'Becoming' by Michelle Obama, 'I Love You, Funny Bunny' by Zondervan, and 'Little Blue Truck's Springtime' by Alice Schertle. Each item has its title, author, price (\$4.49, \$8.14), and quantity (1) displayed. To the right, there's a sidebar for 'Sponsored Products related to items in your cart'.

Amazon.com Shopping Cart

amazon.com/gp/cart/view.html?ref_=nav_cart

Amazon Associates SiteStripe

Get Link: Text Image Text+Image Native Shopping Ads (New) Custom Share: f t

Tried the foreign bank direct deposit yet? Learn more

Earnings Help

Shop Deals of the Day

Browsing History Gregor's Ar

Cart

Your Even's Credit Score

72 - S

The most transparent and distributed credit scoring system.

Cancel See how it's calculated

Subtotal (3 items): \$26.52

This order contains a gift

Proceed to checkout

Check Your Score Apply For Loan

Sign in to turn on 1-Click ordering.

Sponsored Products related to items in your cart

The Easter Surprise... Jennifer Churchman ★★★★☆ 10 Hardcover \$11.37 ✓ prime

See all buying options

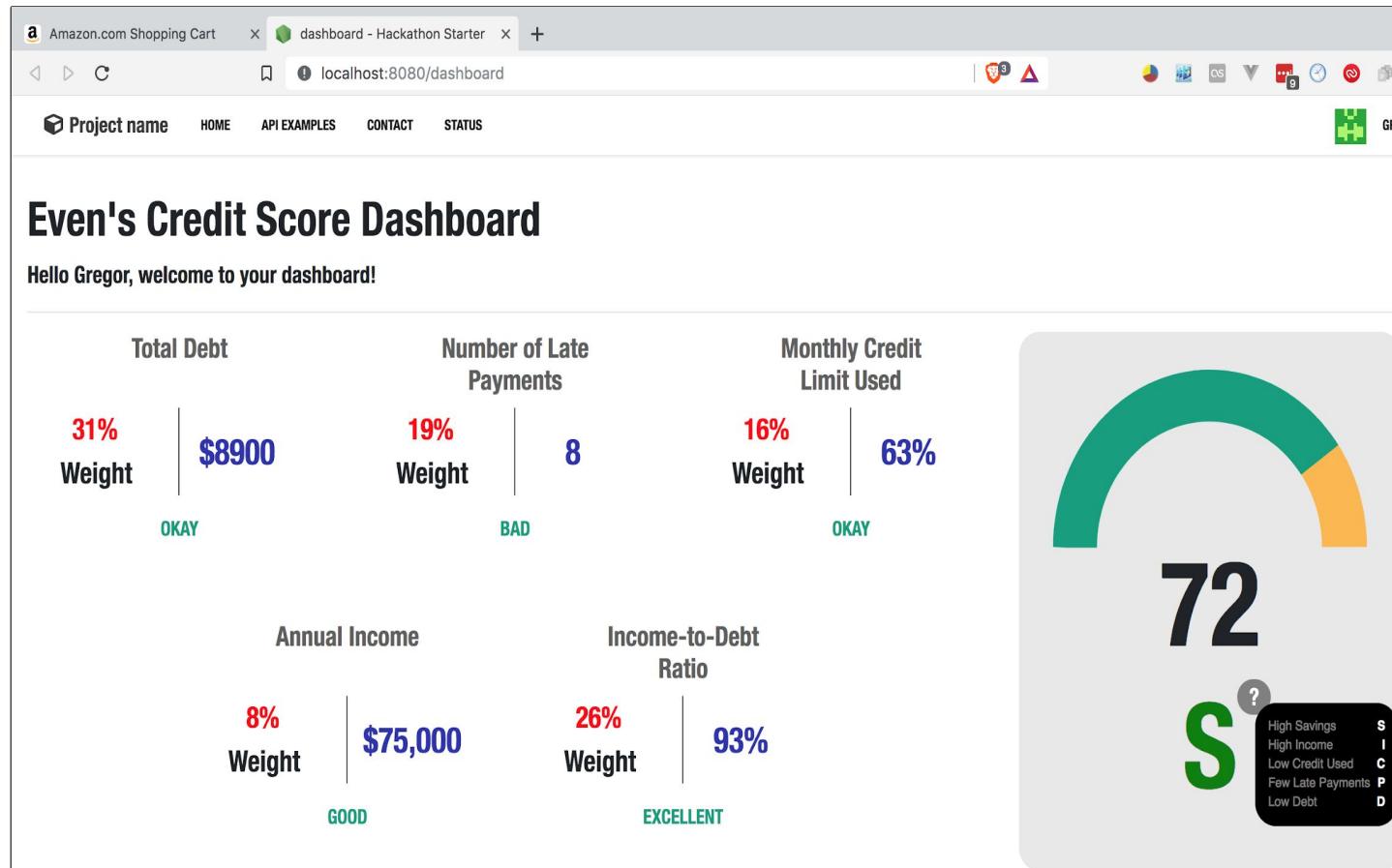
Little Duck: Finger... Chronicle Books ★★★★☆ 60 Board book \$4.42 ✓ prime

See all buying options

<https://www.amazon.com/gp/cobrancard/marketing.html?ref=con321&inc=50gc&ts=505dm31ctsy6kbxihg036dnuzff8qbp&plattr=CB50VC&place=vc&imp=d3c1540e-1847-4a58-a2df-3230fb6f9d9f>

Even's Credit Score Dashboard

- The dashboard shows user's data for the 5 key parameters affecting the Even's Credit Score.
- The dashboards also shows the weight of each parameter and user's performance in them.
- The final credit score(0-100) with user's dominant trait is displayed as a letter.



Apply for Loan

- After seeing the Even's Credit Score the user may then click to 'Apply for Loan'.

The screenshot shows an Amazon shopping cart page with three items in the cart:

- Becoming** by Michelle Obama (Hardcover, \$13.89)
- I Love You, Funny Bunny** by Zondervan (Board book, \$4.49)
- Little Blue Truck's Springtime** by Alice Schertle (Board book, \$8.14)

A promotional message on the left side of the cart area says: "Gregor, get a \$50 Amazon.com Gift Card instantly upon approval for the Amazon Rewards Visa Card". It also displays the current total (\$26.52), savings (\$50.00), cost after savings (\$0.00), and savings remaining (\$23.48). An "Apply now" button is present.

On the right side of the page, there is a sidebar with the following content:

- Your order qualifies for FREE Shipping. Choose this option at checkout. See details
- Subtotal (3 items): \$26.52**
- This order contains a gift
- Proceed to checkout**
- Check Your Score** **Apply For Loan** (This button is circled in red and has a yellow arrow pointing to it from the bottom right.)
- Sign in to turn on 1-Click ordering.
- Sponsored Products related to your cart**
- The Easter Surprise** by Jennifer Church (Hardcover, \$11.37 prime)
- Little Duck: Finger Puppet Book** by Chronicle Books (Board book, \$4.42 prime)
- Little Bunny: Finger Puppet Book** by Chronicle Books (Board book, \$4.42 prime)

The overall layout is typical of an Amazon product listing, with clear pricing, item descriptions, and user interaction points like the "Apply For Loan" button.

Loan Page

- The 'Apply for Loan' pop-up gives the option to 'Apply' or to go back.

A screenshot of the Amazon.com Shopping Cart page. At the top, there's a banner for a \$50 Amazon gift card offer. Below it, the shopping cart contains three items: 'BECOMING' by Michelle Obama, 'I Love You, Funny Bunny' by Zondervan, and 'Little Blue Truck's Springtime' by Alice Schertle. The total subtotal is \$26.52. A dark blue modal dialog box is overlaid on the page, titled 'Apply For Loan'. It contains the text: 'Applying for loan will provide instant results. Loan value will be sent to your account upon acceptance.' It has two buttons: 'Cancel' on the left and 'Apply' on the right, which is circled in red. A large yellow arrow points upwards from the bottom of the page towards the 'Apply' button. The background of the page shows the standard Amazon navigation bar, account information, and promotional banners for deals and prime shipping.

Even's API Loan Form

- The pop-up then loads a form mapped to Even's API fields.
- The user then fills out the form and presses submit.

A screenshot of an Amazon shopping cart page. The cart contains three items with a subtotal of \$26.52. A modal window titled "Apply For Loan" is overlaid on the page. The modal contains instructions about instant results and loan value being sent to the account. It has fields for First Name, Last Name, Address, Zipcode, and Months At Address, each with a corresponding input field. There are "Cancel" and "Apply" buttons at the top right of the modal. The background shows the shopping cart items, including books like "BECOMING" by Michelle Obama and "I Love You, Funny Bunny".

Subtotal (3 items): \$26.52

Check Your Score Apply For Loan

Sign in to turn on 1-Click ordering.

Sponsored Products related to items in your cart

The Easter Surprise...
Jennifer Churchman
★★★★★ 10
Hardcover
\$11.37 ✓ prime
See all buying options

Little Duck: Finger...
Chronicle Books
★★★★★ 60
Board book
\$4.42 ✓ prime
See all buying options

Little Bunny: Finger...
Chronicle Books
★★★★★ 60
Board book
\$4.42 ✓ prime
See all buying options

Subtotal (3 items): \$26.52

Even's API Loan Offers

- The pop-up sends out the information from form to the Even's API.
- The pop-up then fetches and displays the loan offers for the user from the Even's API.
- The user can then accept one of the loan offers to buy the product.

The screenshot shows a user's Amazon shopping cart with three items: "Becoming" by Michelle Obama, "I Love You, Funny Bunny" by Zondervan, and "Little Blue Truck's Springtime" by Alice Schertle. The total subtotal is \$26.52. A modal window titled "Apply For Loan" is overlaid on the page. The modal contains fields for "First Name", "Last Name", "Address", "Zipcode", and "Months At Address". To the right of these fields, a list of loan offers is displayed:

- Provider: Payoff Duration: 36 months APR: 25%
- Provider: Best Egg Duration: 36 months APR: 29.99%
- Provider: Best Egg Duration: 36 months APR: 29.99%
- Provider: Best Egg Duration: 36 months APR: 29.99%

At the bottom of the modal is a "Submit" button.

Do Not Want a Loan

- If the user does not want to apply for loan, then they can select the button 'Proceed to Checkout'.

The screenshot shows an Amazon shopping cart page with the following details:

Cart Summary:

Current Total:	\$ 26.52
Savings:	- \$ 50.00
Cost After Savings:	\$ 0.00
Savings Remaining:	\$ 23.48

Proceed to checkout button (highlighted with a red circle and yellow arrow)

Check Your Score and **Apply For Loan** buttons

Sponsored Products:

- The Easter Surprise...** by Churchman (Hardcover, \$11.37 prime)
- Little Duck: Finger...** by Chronicle Books (Board book, \$4.42 prime)
- Little Bunny: Finger...** by Chronicle Books (Board book, \$4.42 prime)

Subtotal (3 items): \$26.52

Backend Machine Learning

- Our Machine Learning model runs in the background which tries to predict if the user will be able to repay the loan or not.
- Prediction is made based on Even's Credit Score and the required loan amount.

The screenshot shows a Jupyter Notebook interface with several code cells and their outputs:

- In [34]:** `from sklearn.metrics import classification_report`
- In [35]:** `print(classification_report(y_test,predictions))`
Output:

	precision	recall	f1-score	support
0	0.94	0.85	0.89	53
1	0.84	0.93	0.89	46
micro avg	0.89	0.89	0.89	99
macro avg	0.89	0.89	0.89	99
weighted avg	0.89	0.89	0.89	99
- In [36]:** `from sklearn import metrics
MAE = metrics.mean_absolute_error(y_test, predictions)
MSE = metrics.mean_squared_error(y_test, predictions)
RMSE = np.sqrt(MSE)
R_squared = metrics.r2_score(y_test, predictions)
pd.DataFrame(data=[MAE, MSE, RMSE, R_squared], index=['MAE', 'MSE', 'RMSE', 'R Squared'], columns=['Value'])`
Out[36]:

	Value
MAE	7.808081
MSE	0.111111
RMSE	0.333333
R Squared	0.553322
- In [37]:** `from sklearn.metrics import confusion_matrix`
- In [38]:** `confusion_matrix(y_test,predictions)`
Out[38]: `array([[45, 8],
 [3, 43]])`
- In [39]:** `predictions`
Out[39]: `array([0, 0, 1, 1, 0, 0, 0, 0, 1, 1, 0, 0, 0, 0, 1, 0, 1, 0, 1, 0, 1, 0,
 1, 0, 0, 1, 1, 0, 1, 1, 0, 1, 0, 0, 0, 1, 1, 1, 1, 0, 1, 0, 1, 0, 0, 0,
 1, 1, 1, 0, 1, 1, 1, 1, 0, 0, 1, 1, 1, 1, 1, 1, 0, 0, 0, 1, 0, 1, 0, 1, 0,
 1, 1, 0, 1, 0, 1, 0, 1, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 1, 1, 1, 1, 0,
 0, 0, 1, 1, 1, 0, 0, 0, 1, 0, 0, 1, 0, 0, 1, 0, 1, 1, 1, 1, 0], dtype=uint8)`

Suggestion for Loan based on Prediction

- If the user will be able to repay the loan based on prediction, a pop-up is generated.
- The pop-up suggests the user to take a loan on basis of prediction.
- This is a strategy to increase Even's business.

The screenshot shows an Amazon shopping cart page with three items: "Becoming" by Michelle Obama, "I Love You, Funny Bunny" by Zondervan, and "Little Blue Truck's Springtime" by Alice Schertle. The subtotal is \$26.52. A dark blue pop-up box with white text appears over the cart area. The pop-up has a title "Good News!" and a message stating: "Based on your Even's Credit Score and the required loan amount, our system predicts that you have a high chance of repaying the loan." It contains two buttons: "Apply for loan" and "No, I want to checkout".

Amazon.com Shopping Cart | dashboard - Hackathon Starter | +

Get Link: Text Image Text+Image Native Shopping Ads (New) Share: f t

Tried the foreign bank direct deposit yet? Learn more

Earnings Help

Shop Deals of the Day

Hello, Gregor Account & Lists Orders Try Prime Cart

Subtotal (3 items): \$26.52

Check Your Score Apply For Loan

Sign in to turn on 1-Click ordering.

Browsing History Gregor's Amazon

Good News!

Based on your Even's Credit Score and the required loan amount, our system predicts that you have a high chance of repaying the loan.

Apply for loan No, I want to checkout

Quantity

\$13.89

Becoming by Michelle Obama
Hardcover
In Stock
Eligible for FREE Shipping
 This is a gift Learn more
Delete Save for later Compare with similar items

I Love You, Funny Bunny by Zondervan
Board book
Usually ships within 1 to 3 weeks
Eligible for FREE Shipping
 This is a gift Learn more
Delete Save for later Compare with similar items

Little Blue Truck's Springtime by Alice Schertle
Board book
In Stock
Eligible for FREE Shipping
 This is a gift Learn more
Delete Save for later Compare with similar items

\$4.49

\$8.14

Subtotal (3 items): \$26.52

Sponsored Products related to items in your cart

The Easter Surprise...
Jennifer Churchman
★★★★★ 10
Hardcover
\$11.37
See all buying options

Little Duck: Finger...
Chronicle Books
★★★★★ 60
Board book
\$4.42
See all buying options

Little Bunny: Finger...
Chronicle Books
★★★★★ 60
Board book
\$4.42
See all buying options

Checkout Page

- The user then proceeds to check-out and make an purchase either using the loan or through personal funds.

The screenshot shows the 'Select a shipping address' page on Amazon. At the top, there are three tabs: 'Select a shipping address', 'dashboard - Hackathon Starter', and 'dashboard - Hackathon Starter'. Below the tabs is the Amazon header with the logo, sign-in options, and navigation links for 'SHIPPING & PAYMENT', 'GIFT OPTIONS', and 'PLACE ORDER'. A message at the top right says 'Sending items to more than one address? Ship to multiple addresses'. The main section is titled 'Select a shipping address' and contains instructions: 'Is the address you'd like to use displayed below? If so, click the corresponding "Deliver to this address" button. Or you can enter a new shipping address.' Below this, there's a section for 'Or ship to an Amazon Pickup location' with a link to 'Search for an Amazon Pickup location near you'. Three address entries are listed:

Address Name	Address Details	Action Buttons
Gregor Richardson	200 10th Ave E Unit 2d Seattle, Washington 98102 United States Phone: 3059895420 Add delivery instructions	<button>Deliver to this address</button> <button>Edit</button> <button>Delete</button>
Gregor Richardson	200 10TH AVE E UNIT 2D SEATTLE, Washington 98102 United States Phone: 3059895420 Add delivery instructions	<button>Deliver to this address</button> <button>Edit</button> <button>Delete</button>
Gregor V Richardson	3636 Francis Ave 301 Seattle, Wa 98103 United States Phone: 305-989-5420 Add delivery instructions	<button>Deliver to this address</button> <button>Edit</button> <button>Delete</button>

Below these entries is a section for 'Add a new address' with fields for 'Full name', 'Address line 1', and 'Address line 2'. To the right is a section for 'Or search for an Amazon Pickup location near you' with a note about picking up packages from self-service lockers or staffed locations, a 'Learn more' link, and dropdown menus for 'Country/Region' (set to United States) and search methods ('Search by Address', 'Search by Zip Code', 'Search by Landmark').

Thank you!

Appendix (code):

<https://github.com/gricha2380/defhackathon2019>