PyBank

An Interactive GUI Desktop Application

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Course: CS 620 Human-Computer Interaction

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Outline

1. Novel Characteristics & Intended Users
2. Why We Chose a Python Desktop Application
3. Component Overview
4. HCI
5. Planned Functionality
6. Design to Implementation (So Far)
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Novel Characteristics & Intended Users

Novel Characteristics

- While there are multiple options for mobile banking applications, there is a lack of desktop clients.
- PyBank would add a new medium for accessing banking information for people who do not have a mobile device or have limited internet connectivity.

Intended Users

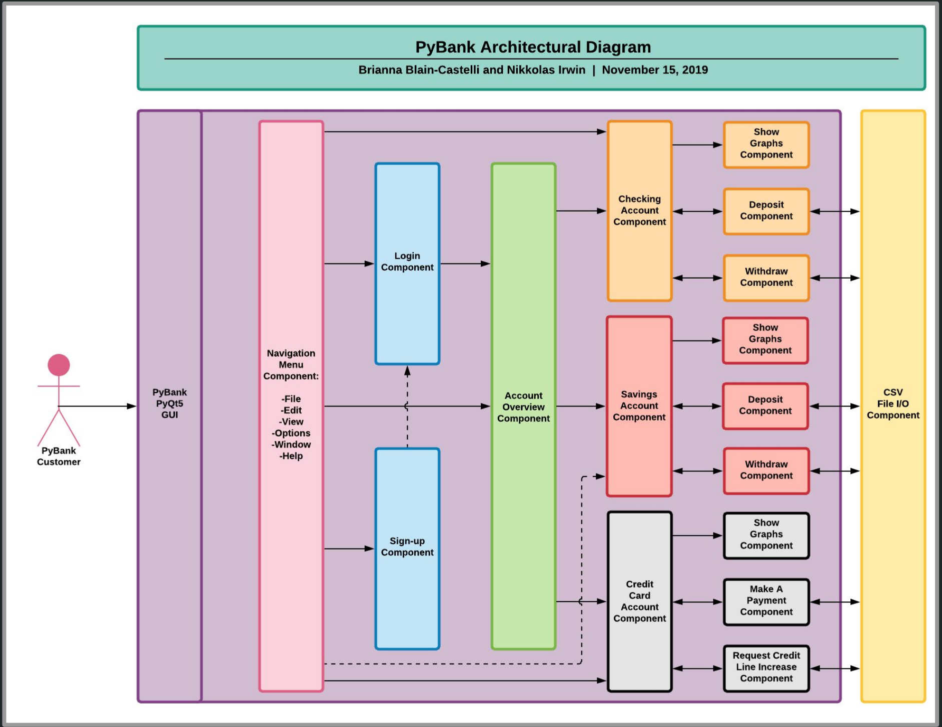
- Owners of small to medium sized businesses
- Personal use

Why We Chose a Python Desktop Application

- New Experience
- Challenging
- Unique Opportunity (Desktop GUI)
- More Python Experience

Component Overview

- Navigation Menu
- Login Component
- Sign-up Component
- Account Overview Component
- Checking Account Component
- Savings Account Component
- Credit Card Account Component
- CSV File I/O Component



PyBank Architectural Diagram

Brianna Blain-Castelli and Nikkolas Irwin | November 15, 2019

PyBank Customer

PyBank PyQt5 GUI

Navigation Menu Component:

-File
-Edit
-View
-Options
-Window
-Help

Login Component

Sign-up Component

Account Overview Component

Checking Account Component

Show Graphs Component

Deposit Component

Withdraw Component

Savings Account Component

Show Graphs Component

Deposit Component

Withdraw Component

Credit Card Account Component

Show Graphs Component

Make A Payment Component

Request Credit Line Increase Component

CSV File I/O Component

Figure 1: An architectural diagram created using LucidChart [6].

HCI

- Consistent user interface and grammar
- Reduce errors while protecting privacy (Show password option)
- Dialogue provided to the user through progress bars
- Easy reversal of actions using back buttons
- Informative feedback through error boxes

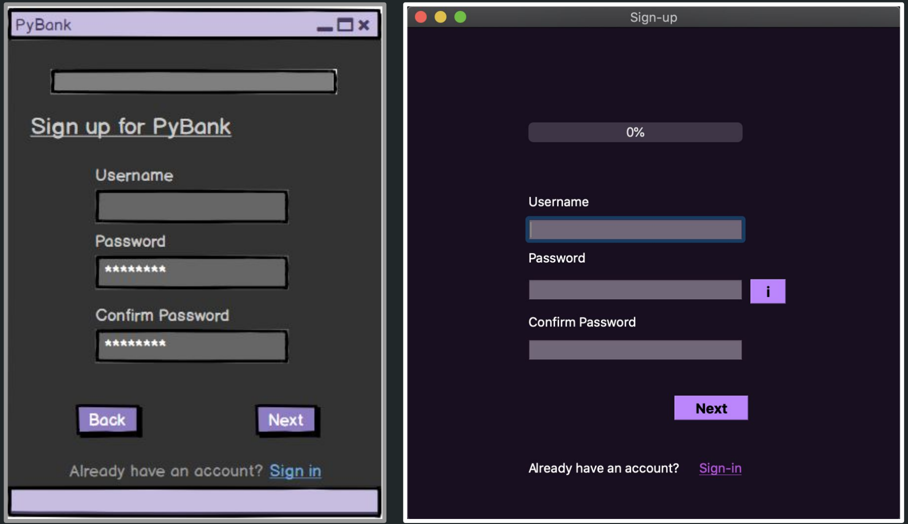
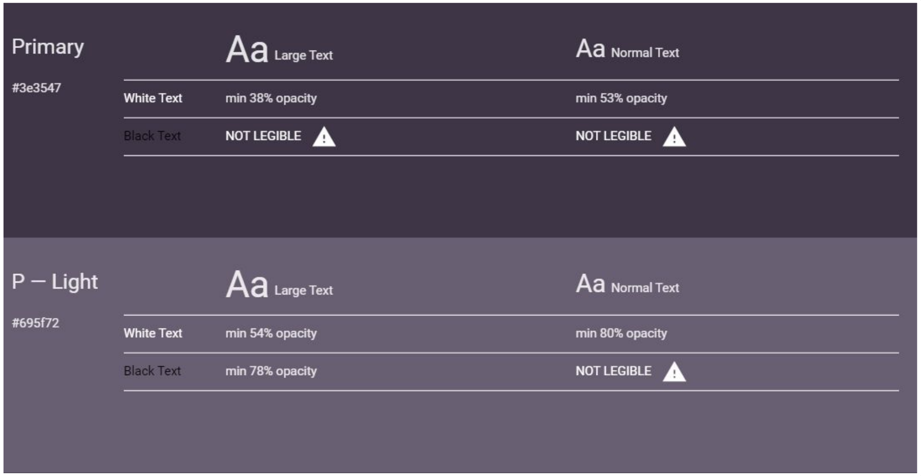


Figure 2: The sign-up page mockup created using Balsamiq, showing progress through a status bar next to prototype implementation [5].

HCI

- Accessible colors in a dark theme using Google's Material Design suite [4]
- Keyboard accessibility
- Use of Helvetica font for accessibility
- Use of real world terminology for user friendliness



Primary #3e3547		Aa Large Text	Aa Normal Text
	White Text	min 38% opacity	min 53% opacity
	Black Text	NOT LEGIBLE ⚠	NOT LEGIBLE ⚠
P — Light #695f72		Aa Large Text	Aa Normal Text
	White Text	min 54% opacity	min 80% opacity
	Black Text	min 78% opacity	NOT LEGIBLE ⚠

Figure 3: Output from Google's Material Design suite showing font legibility with color schemes [4].

Planned Functionality

- Working login and signup for the application with different information for each user, and password authentication
- The ability to view an account summary
- The ability to see account details
- Graphical representations of finances

Disclaimer: While we recognize security is important in a banking application, it is outside the scope of this project--which is designed more around providing a good user experience. Were this project further developed in the future, we would implement more security in the application.

Design to Implementation (So Far)

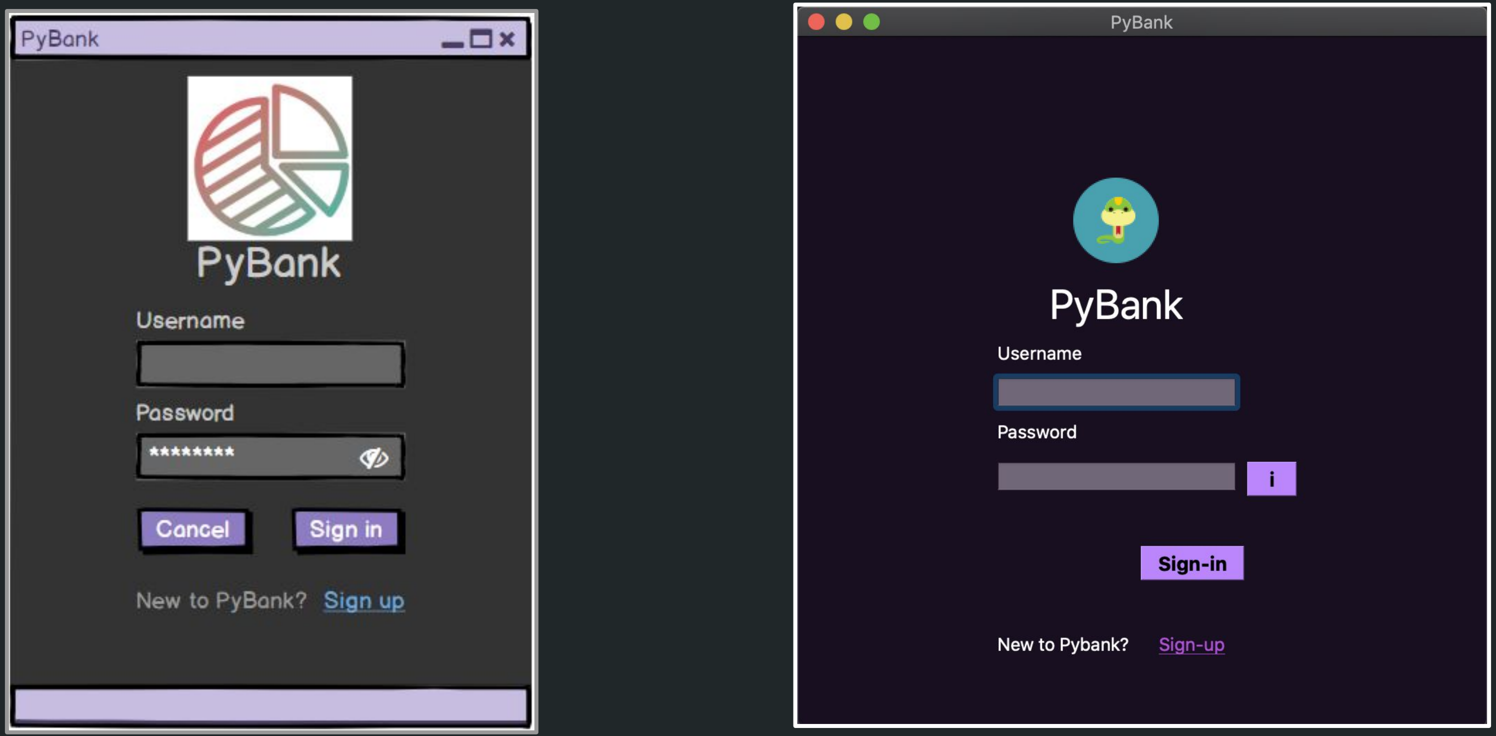
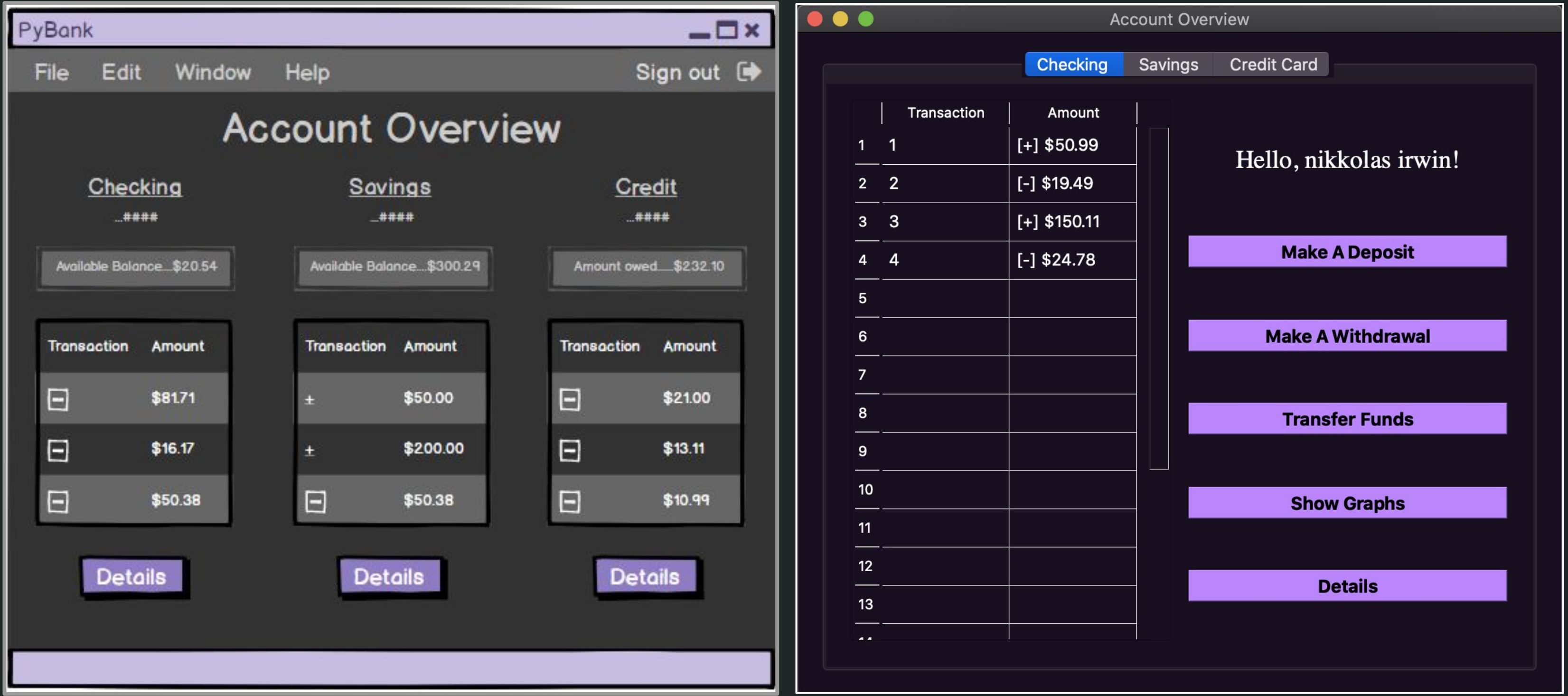


Figure 4: The Sign-in window mockup created using Balsamiq is shown side-by-side with the current implementation using Python and PyQt5 [5].

Design to Implementation (So Far)



Available Balance...$20.54

Transaction	Amount
⊟	$81.71
⊟	$16.17
⊟	$50.38

Available Balance...$300.29

Transaction	Amount
+	$50.00
+	$200.00
⊟	$50.38

Amount owed...$232.10

Transaction	Amount
⊟	$21.00
⊟	$13.11
⊟	$10.99

	Transaction	Amount
1	1	[+] $50.99
2	2	[-] $19.49
3	3	[+] $150.11
4	4	[-] $24.78
5		
6		
7		
8		
9		
10		
11		
12		
13		

Hello, nikkolas irwin!

Figure 5: The Account Overview window mockup created using Balsamiq is shown side-by-side with the current implementation using Python and PyQt5 [5].

References

[1] D. Norman, The Design of Everyday Things, pp. 1–73. Basic Books, Revised & Expanded ed., 2013.

[2] B. Shneiderman, C. Plaisant, M. Cohen, S. Jacobs, N. Elmqvist, and N. Diakopoulos, Designing the User Interface: Strategies for Effective Human-Computer Interaction. Pearson Education Limited, Sixth ed., 2018.

[3] Matplotlib, “Matplotlib: Python Plotting.” https://matplotlib.org, 2018. Accessed on 2019-11-29.

[4] Google, “Material Design.” https://material.io/, 2019. Accessed on 2019-11-29.

[5] Balsamiq, “Balsamiq, Rapid, effective and fun wireframing software..” https://balsamiq.com, 2019. Accessed on 2019-11-29.

[6] Lucidchart, “Lucidchart: Online Diagram Software & Visual Solution.” https://www.lucidchart.com/pages/?noHomepageRedirect=true, 2019. Accessed on 2019-11-29.

[7] Icons8, “Icons8: Free Icons.” https://icons8.com/icons, 2019. Accessed on 2019-11-29.

Q & A

Any Questions?