OPENPAY

An open-source, payroll management application

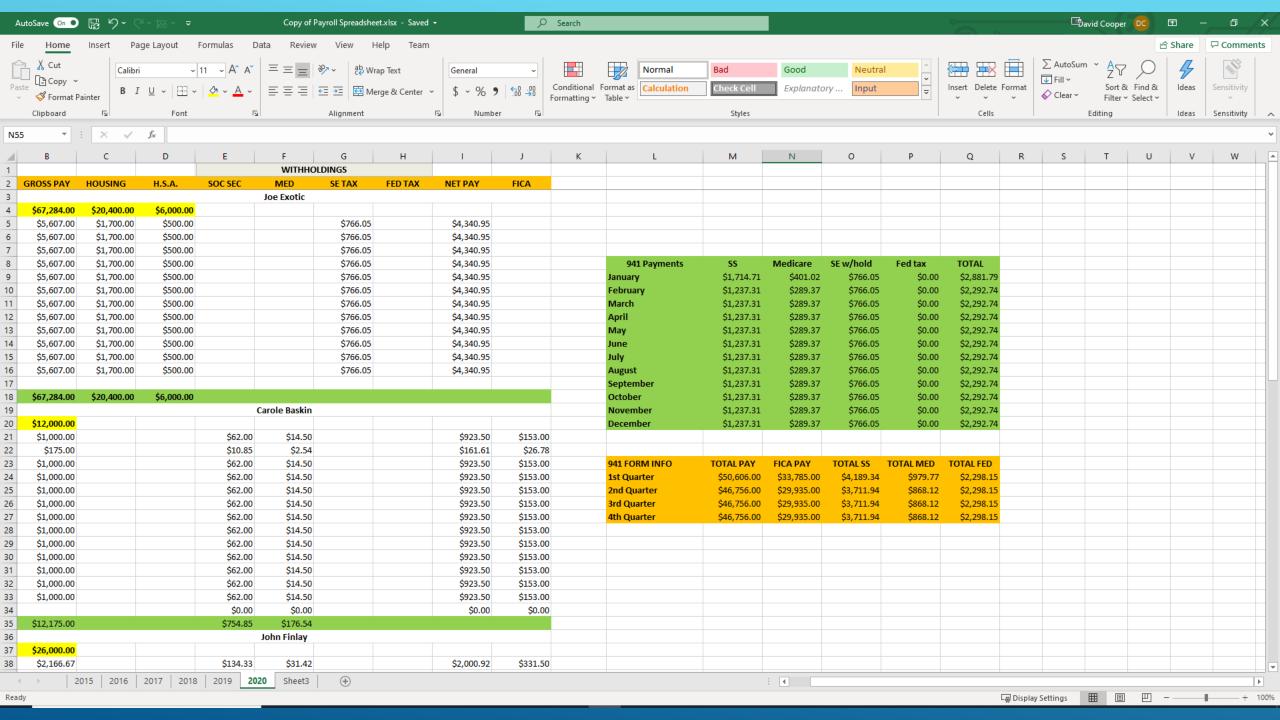
- Current Payroll Applications are expensive and overloaded with features.
 - QuickBooks' cheapest Payroll Plan: \$540/year + \$4/employee per month
- Small businesses and non-profits do not have a lot of options even if they have less than 10 employees.

THE NEED

- Indigenous Outreach International
- "Who We Are: We are an evangelical intra-Church Christian missionary organization working through the local Church to promote faith, discipleship, edification, authority, and love." (ioiusa.org)
- "What We Believe: Making disciples for Christ is our mission and we partner with folks from a variety of evangelical Christian churches to achieve this goal." (ioiusa.org)

THE CLIENT





- Payroll management application tailored to small businesses and non-profits
- Simplistic design
- ▶ Ease of Use
- > Free!

THE GOAL

- OpenPay
- Allows tracking of Positions, Employees, and Payments
- Automatic Payment Calculation
- Automatic Paystub Generation
- Open-Source free to use, code can be accessed and customized according to needs
- Cross-Platform

THE SOLUTION

- Desktop Application
- ▶ Language Python
- Database Management MySQL

PLANNING PHASE

- Week 1 Learn the basics of getting started using Python
- Week 2 Setup SQL Server, Database, and Table
- Week 3-4 Python functions built for minimum functionality
- Week 5-6 Build GUI and GUI Functionality
- Week 7 Complete Planned Goals
- Week 8 Work on Stretch Goals
- Week 9 Begin building presentation
- Week 10 Finalize and practice presentation

TIMELINE

- Learning Python
- ▶ Learning MySQL
- ► Learning Python-MySQL Interaction
- ▶ Learning to build a GUI
- ▶ Learning... Accounting?

LEARNING

- Built by Guido van Rossum in the 1980's, named after Monty
 Python
- Cross-Platform
- Uses White Space and Indentation -> increases readability
- ▶ Technically a scripting language -> easily runs across devices

PYTHON

Java

```
package pyramid;
public class Pyramid {
    public static void main(String[] args) {
        for(int i=1; i<=5; i++){
            for(int j=0; j<i; j++) {</pre>
                System.out.print("*");
            System.out.println("");
```

```
Output - Pyramid (run) ×

run:

*

**

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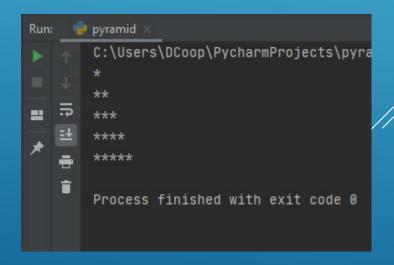
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BUILD SUCCESSFUL (total time: 0 seconds)
```

Python

```
def create_pyramid(rows):
    for i in range(rows):
        print('*' * (i + 1))

create_pyramid(5)
```



- ▶ Positions Table Financial Information
- ► Employees Table Personal Information, Financial Information
- Payments Table Payment Details, no totals

DATABASE DESIGN

- MySQL Community Server does not support Database Encryption
- > Database is password-protected, but not encrypted
- Cannot store social security numbers

ROADBLOCK

- Time Management
- ▶ Building a GUI from scratch is S L O W.
- No easy to use a form builder
- No easy way to create a table
- Creating a scrollable window
- So many scenarios to prepare for
- Learning a new program and building a large application simultaneously

CHALLENGES

- ▶ Learning Python went easier than expected.
- Python allows different datatypes in the same array.
- Python Packages
 - MySQL-Connector, Docx Template
- Learned how to build a GUI, use a new language, use a real-world database application.

SUCCESSES

- (Almost) Everything in programming takes longer than you expect.
- ▶ Nail down a database design early.
- > Plan ahead.
- Pace yourself implement core features before worrying about details.

LESSONS LEARNED