

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



AutoSaveOn

Copy of Payroll Spreadsheet.xlsx - Saved

Search

David CooperDC

FileHomeInsertPage LayoutFormulasDataReviewViewHelpTeam

CutCopyFormat Painter

Clipboard

Calibri11

B I U

Font

Align Center

Alignment

General

\$ %

Number

Conditional Formatting

Format as Table

NormalBadGoodNeutral

CalculationCheck CellExplanatory...Input

Styles

InsertDeleteFormat

Cells

AutoSumFillClear

Editing

Sort & FilterFind & Select

Editing

Ideas

Ideas

Sensitivity

Sensitivity

N55

X✓fx

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
2	GROSS PAY	HOUSING	H.S.A.	SOC SEC	MED	SE TAX	FED TAX	NET PAY	FICA													
3																						
4	\$67,284.00	\$20,400.00	\$6,000.00																			
5	\$5,607.00	\$1,700.00	\$500.00			\$766.05		\$4,340.95														
6	\$5,607.00	\$1,700.00	\$500.00			\$766.05		\$4,340.95														
7	\$5,607.00	\$1,700.00	\$500.00			\$766.05		\$4,340.95														
8	\$5,607.00	\$1,700.00	\$500.00			\$766.05		\$4,340.95														
9	\$5,607.00	\$1,700.00	\$500.00			\$766.05		\$4,340.95														
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11	\$5,607.00	\$1,700.00	\$500.00			\$766.05		\$4,340.95														
12	\$5,607.00	\$1,700.00	\$500.00			\$766.05		\$4,340.95														
13	\$5,607.00	\$1,700.00	\$500.00			\$766.05		\$4,340.95														
14	\$5,607.00	\$1,700.00	\$500.00			\$766.05		\$4,340.95														
15	\$5,607.00	\$1,700.00	\$500.00			\$766.05		\$4,340.95														
16	\$5,607.00	\$1,700.00	\$500.00			\$766.05		\$4,340.95														
17																						
18	\$67,284.00	\$20,400.00	\$6,000.00																			
19																						
20	\$12,000.00																					
21	\$1,000.00			\$62.00	\$14.50			\$923.50	\$153.00													
22	\$175.00			\$10.85	\$2.54			\$161.61	\$26.78													
23	\$1,000.00			\$62.00	\$14.50			\$923.50	\$153.00													
24	\$1,000.00			\$62.00	\$14.50			\$923.50	\$153.00													
25	\$1,000.00			\$62.00	\$14.50			\$923.50	\$153.00													
26	\$1,000.00			\$62.00	\$14.50			\$923.50	\$153.00													
27	\$1,000.00			\$62.00	\$14.50			\$923.50	\$153.00													
28	\$1,000.00			\$62.00	\$14.50			\$923.50	\$153.00													
29	\$1,000.00			\$62.00	\$14.50			\$923.50	\$153.00													
30	\$1,000.00			\$62.00	\$14.50			\$923.50	\$153.00													
31	\$1,000.00			\$62.00	\$14.50			\$923.50	\$153.00													
32	\$1,000.00			\$62.00	\$14.50			\$923.50	\$153.00													
33	\$1,000.00			\$62.00	\$14.50			\$923.50	\$153.00													
34				\$0.00	\$0.00			\$0.00	\$0.00													
35	\$12,175.00			\$754.85	\$176.54																	
36																						
37	\$26,000.00																					
38	\$2,166.67			\$134.33	\$31.42			\$2,000.92	\$331.50													

201520162017201820192020

Sheet3

Ready

Display Settings

100%

941 Payments

SS

Medicare

SE w/hold

Fed tax

TOTAL

January

February

March

April

May

June

July

August

September

October

November

December

\$1,714.71	\$401.02	\$766.05	\$0.00	\$2,881.79
\$1,237.31	\$289.37	\$766.05	\$0.00	\$2,292.74
\$1,237.31	\$289.37	\$766.05	\$0.00	\$2,292.74
\$1,237.31	\$289.37	\$766.05	\$0.00	\$2,292.74
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\$1,237.31	\$289.37	\$766.05	\$0.00	\$2,292.74
\$1,237.31	\$289.37	\$766.05	\$0.00	\$2,292.74

941 FORM INFO

TOTAL PAY

FICA PAY

TOTAL SS

TOTAL MED

TOTAL FED

1st Quarter

2nd Quarter

3rd Quarter

4th Quarter

\$50,606.00	\$33,785.00	\$4,189.34	\$979.77	\$2,298.15
\$46,756.00	\$29,935.00	\$3,711.94	\$868.12	\$2,298.15
\$46,756.00	\$29,935.00	\$3,711.94	\$868.12	\$2,298.15
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- ▶ 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++) {
                System.out.print("*");
            }

            System.out.println("");
        }

    }

}
```

```
Output - Pyramid (run) x
run:
*
**
***
****
*****
BUILD SUCCESSFUL (total time: 0 seconds)
```

Python

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

create_pyramid(5)
```

```
Run: pyramid x
C:\Users\DCoop\PycharmProjects\pyra
*
**
***
****
*****
Process finished with exit code 0
```

- ▶ 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.

SUCCESS

- ▶ (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