

# MGMT Capstone Project PPC - Smart Portfolio Builder for Crypto Assets

Group 12: Alan-Wu, James Lee, Akash  
Desai, Austin Sun, Gary Yong



# Agenda

- Quick refresher on our project
- Where we left off in MSCI 401
- What we changed for 402
- Algorithm Update
- Demo
- Next Steps

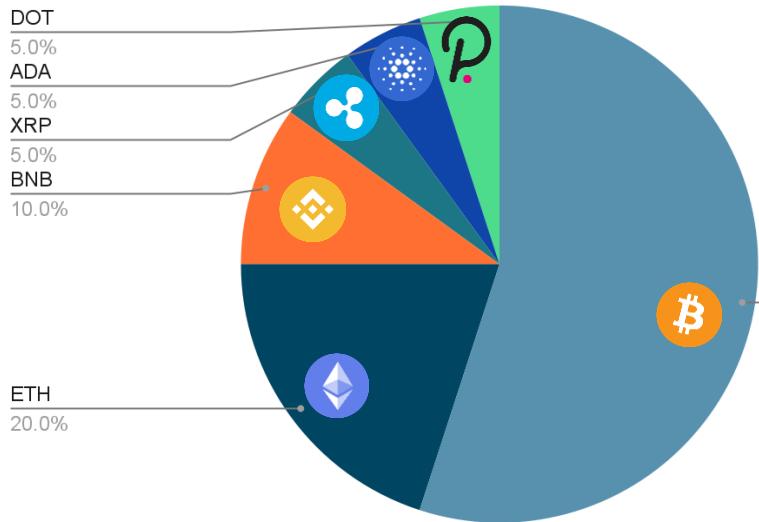


# Need Statement

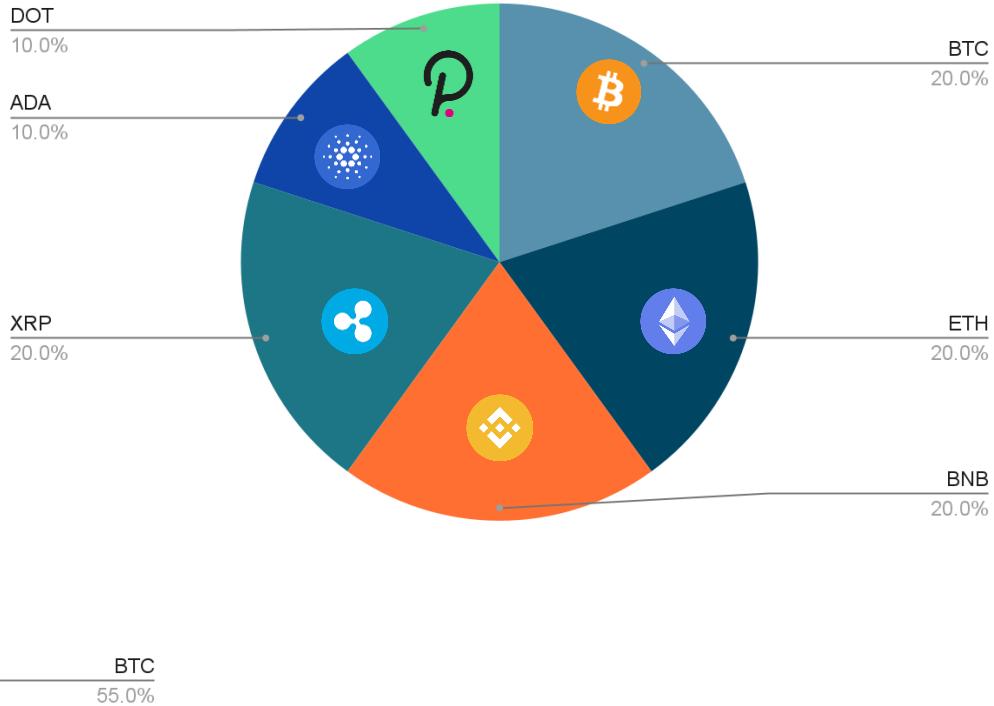
**Need Statement:** “Need for a tool that assists users with making safe, educated decisions regarding which holdings to purchase in the cryptocurrency space as the market grows and asset classes evolve.”

# Smart Crypto Portfolio Building

Low Risk Portfolio



High Risk Portfolio





# Where we left off at MSCI 401

- Initial problem/market analysis
- Potential user Analysis
- Finalized design objectives
- Second Iteration of solution prototyping
- Basic research on backend index building algorithm

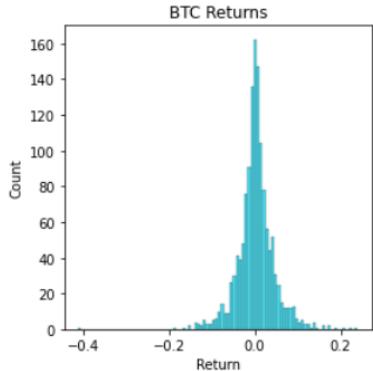


# New For MSCI 402

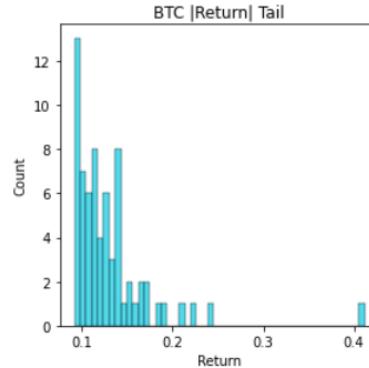
- Removed wallet linking capability
  - Complex logic and time Limitation
  - Feedback received saying public is not likely to trust a 3rd party with their wallet
  - Legal & liability concerns
  - Can still make MVP without it (To build a tool that generates a diversified crypto portfolio trailered to the users risk tolerance)
- Functional Web App (WIP)
  - Feedback received, last design was too bright/flashy.
- Settled on risk evaluation models:
  - User Eval -> Crypto Eval -> Portfolio Allocation
  - Survey -> Weiss Rating -> Markowitz Optimization Model

# Tail Index Research

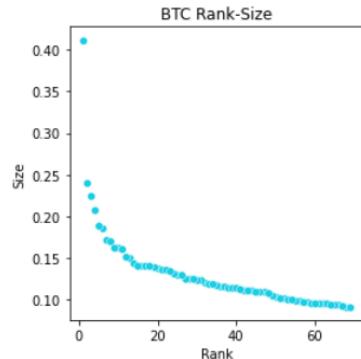
1)



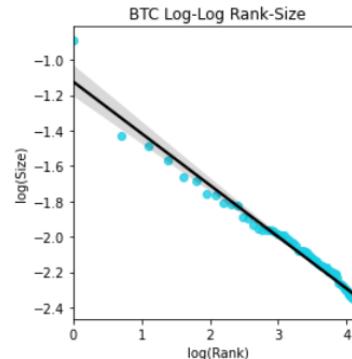
2)

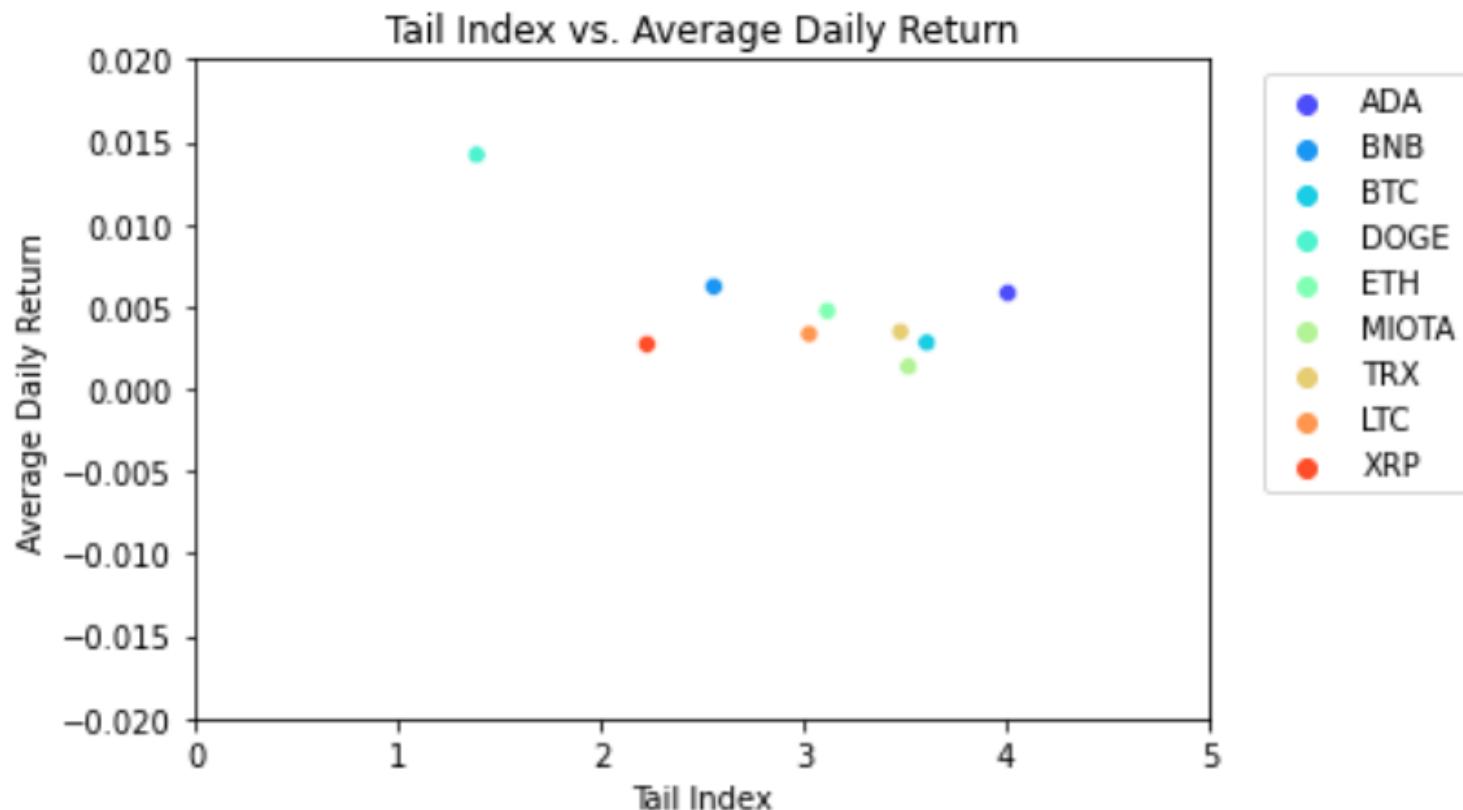


3)



4)

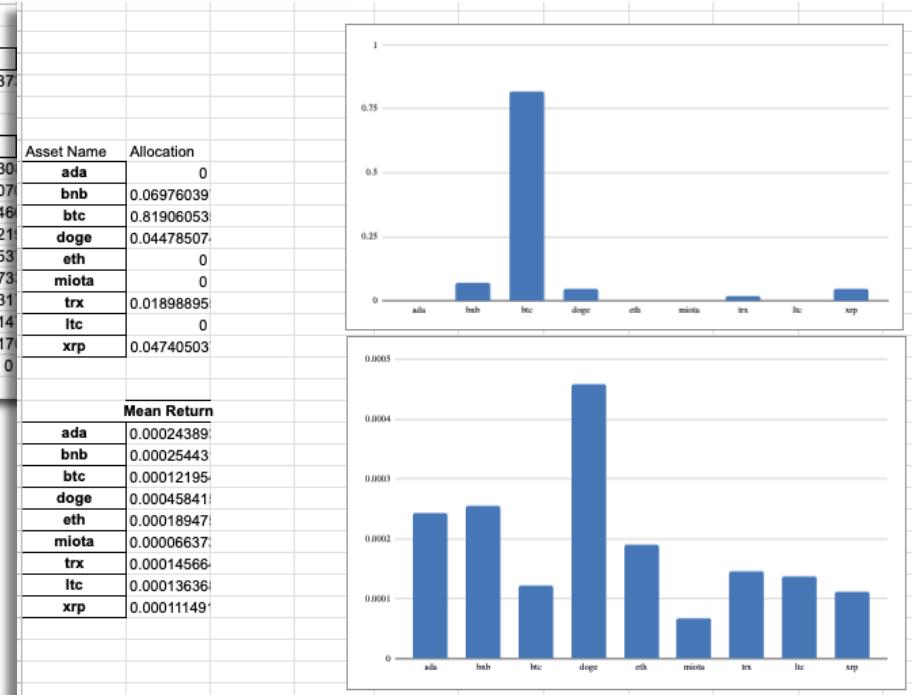
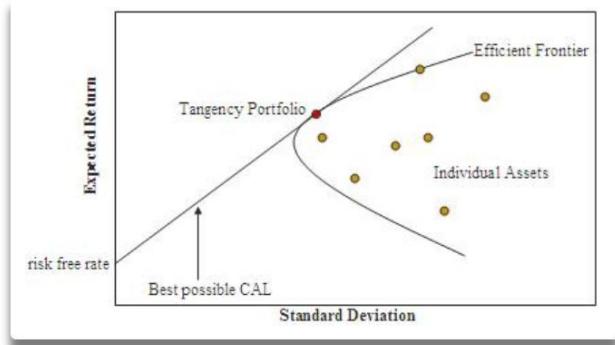






# Mean-Variance Analysis

Asset Name	Allocation	ada	bnb	btc	doge	eth	miota
ada	0						
bnb	0.06976039	0.00024389	0.00025443	0.00012195	0.00045841	0.00018947	0.00006637
btc	0.81906053						
doge	0.04478507						
eth	0						
miota	0						
trx	0.01898895	0.00015600	0.00008481	0.00006536	0.00006500	0.00008517	0.00010030
ltc	0	0.00008481	0.00013098	0.00006117	0.00005752	0.00007552	0.00008707
xrp	0.04740503	0.00006536	0.00006117	0.00006863	0.00005407	0.00006715	0.00006646
<b>Total</b>	<b>1</b>	<b>0.00006500</b>	<b>0.00005752</b>	<b>0.00005407</b>	<b>0.00032829</b>	<b>0.00006037</b>	<b>0.00006621</b>
<b>Desired Return</b>	<b>0.00014621</b>						
		<b>ada</b>	<b>bnb</b>	<b>btc</b>	<b>doge</b>	<b>eth</b>	<b>miota</b>
		0.00015600	0.00008481	0.00006536	0.00006500	0.00008517	0.00010030
		0.00008481	0.00013098	0.00006117	0.00005752	0.00007552	0.00008707
		0.00006536	0.00006117	0.00006863	0.00005407	0.00006715	0.00006646
		0.00006500	0.00005752	0.00005407	0.00032829	0.00006037	0.00006621
		0.00008517	0.00005752	0.00006715	0.00006037	0.00009806	0.00008453
		0.00010030	0.00008707	0.00006646	0.00006621	0.00008453	0.00016873
		0.00009816	0.00008179	0.00006256	0.00005970	0.00008203	0.00009431
		0.00009464	0.00008218	0.00007104	0.00006585	0.00009028	0.00009314
		0.00009042	0.00007573	0.00005941	0.00005983	0.00007707	0.00009317
		<b>Variance</b>	0	0.00000467	0.00005480	0.00000299	0
							0





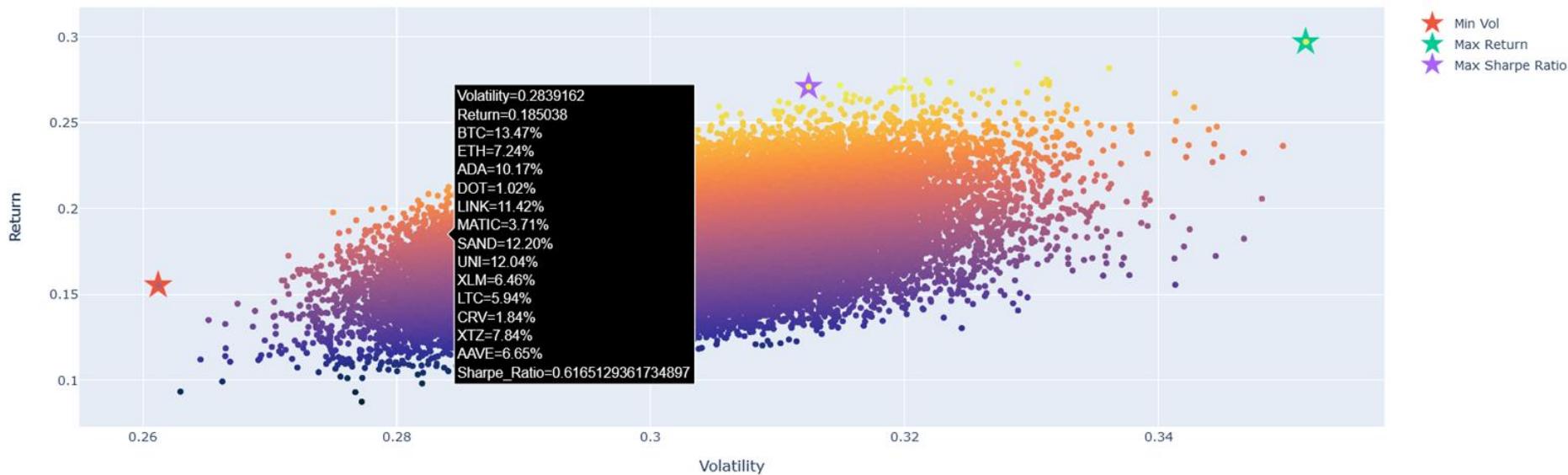
# Random Portfolio Generation

	BTC	ETH	ADA	DOT	LINK	MATIC	SAND	UNI	XLM	LTC	CRV	XTZ	AAVE	Return	Volatility	Sharpe_Ratio
0	2.05%	10.82%	2.12%	10.17%	10.92%	6.77%	0.31%	0.90%	14.01%	16.43%	7.18%	5.69%	12.64%	0.138171	0.300741	0.426184
1	3.63%	8.62%	10.64%	6.27%	10.28%	9.51%	2.80%	4.37%	7.49%	7.76%	15.11%	3.19%	10.33%	0.173180	0.312457	0.522249
2	3.00%	4.85%	0.50%	1.70%	16.06%	17.49%	13.69%	3.79%	15.58%	19.37%	3.42%	0.54%	0.00%	0.217090	0.302352	0.684928
3	11.64%	13.56%	12.38%	3.72%	13.80%	10.73%	0.21%	13.61%	11.94%	1.55%	0.64%	0.42%	5.78%	0.156391	0.289934	0.504914
4	3.42%	16.80%	6.93%	15.61%	10.04%	1.94%	4.12%	4.79%	4.07%	15.59%	0.54%	10.41%	5.74%	0.133807	0.290167	0.426674
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
49995	6.83%	8.60%	1.50%	2.59%	10.92%	12.03%	8.23%	3.78%	15.94%	11.37%	1.38%	1.28%	15.55%	0.192795	0.292769	0.624367
49996	14.03%	9.07%	6.86%	11.03%	3.71%	4.25%	5.77%	13.40%	12.58%	7.96%	2.72%	5.43%	3.18%	0.145201	0.283029	0.477692
49997	15.52%	16.85%	2.85%	3.31%	1.17%	11.20%	6.21%	5.86%	5.95%	8.34%	8.02%	0.63%	14.10%	0.179812	0.289002	0.587581
49998	8.31%	8.94%	12.45%	8.43%	3.28%	0.35%	10.51%	7.39%	9.26%	12.07%	4.05%	8.41%	6.54%	0.154630	0.284535	0.508303
49999	3.24%	9.92%	13.35%	1.04%	10.33%	13.31%	12.27%	7.82%	4.92%	4.14%	5.49%	1.20%	12.97%	0.230758	0.306253	0.720835

50000 rows × 16 columns



# Optimal Portfolios



# Demo



# Next Steps

- Further iteration on Markowitz Analysis
- Continue development
  - o Refine usage of Smart Contract & NFT
- Continuously iterating on design and features based on feedback

# The End, thank you!

Q&A



# Appendix



[Get Started](#)

**Make money from  
lunar portfolio**



## Welcome Back!

Enter your email and password to sign in

Email

Your email address

Password

Your password

Remember me

**SIGN IN**

Or log in with

Continue with Google

Continue with Facebook

Don't have an account? [Sign Up](#)

# Welcome!

Use these awesome forms to login or create new account in your project for free.

## Register With



or

Name

Gary

Email

Your email address

Password

Your password

Remember me

SIGN UP

Already have an account? [Sign In](#)



Dashboard



Survey

## ACCOUNT PAGES



Profile

# Good Morning Bill,

## this is your portfolio today.

### Active Portfolio Status

#### GROSS BALANCE

\$123 000 +\$5400



	21%	<span style="color: green;">+13%</span>
	45%	<span style="color: red;">-6%</span>
	12%	<span style="color: red;">-10%</span>
	9%	<span style="color: green;">+3%</span>

[Portfolio](#)

### Re-evaluate Your Risk Tolerance

Your risk tolerance may change as you become more experienced in the market, have new investment goals or if your financial situation changes.

[Re-evaluate](#)

### Latest Crypto Related Information



#### Security Tokens

What are Security Tokens? How are they used? Why is it being used? (5 min read)

[Read](#)

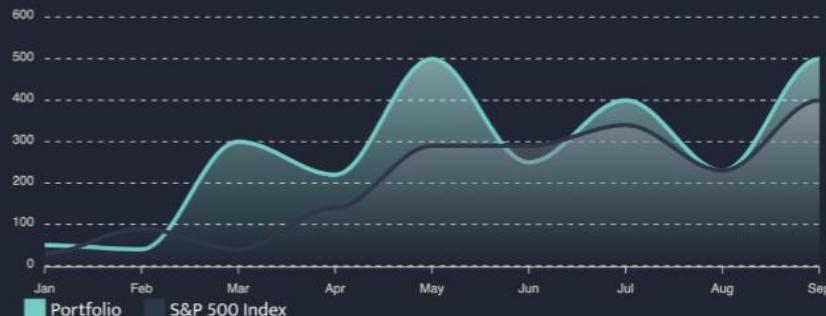
#### Stable Coins

Stable Coins 101: What You Need to Know (10 min read)

[Read](#)

### Overall Performance

(+5%) more in 2021





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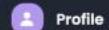
Pages / profile

G Gary



Survey

ACCOUNT PAGES

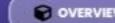


Profile



Gary Yong

yonggary329@gmail.com



OVERVIEW



TEAMS



PROJECTS

### Paper Trading Balance

#### Current Value

**\$438** +\$438

#### Starting Balance

**\$10 000**[Reset Balance](#)

### Profile Information

Hi, I'm Esthera Jackson, Decisions: If you can't decide, the answer is no. If two equally difficult paths, choose the one more painful in the short term (pain avoidance is creating an illusion of equality).

**Full Name:** Esthera Jackson**Mobile:** (44) 123 1234 123**Email:** esthera@simmpple.com**Location:** United States**Social Media:** [Facebook](#) [Instagram](#) [Twitter](#)

### Evaluation History

<b>Very Conservative</b>	2022/02/01
<b>Very Conservative</b>	2022/01/11
<b>Very Conservative</b>	2022/01/01
<b>Very Conservative</b>	2021/11/01
<b>Very Conservative</b>	2021/06/01

### Projects

Architects design houses

 Dashboard Survey

ACCOUNT PAGES

 Profile

July 2nd, 2021



## Security Tokens

What are Security Tokens? How are they used? Why is it being used?

(5 min read)

[Read](#)

June 2nd, 2021



## Stable Coins

Stable Coins 101: What You Need to Know (10 min read)

[Read](#)

June 2nd, 2021



## Blockchain

Blockchain 101: What You Need to Know (10 min read)

[Read](#)

 Dashboard Survey

## ACCOUNT PAGES

 Profile

# User Risk Evaluation

Let's do a quick check on your personal risk tolerance, this will help us provide you with a balanced crypto portfolio that fits you best. Answer the following 11 simple multiple choice questions that evaluates your risk tolerance based on experience, habit, goal, and financial standing.

 Experience Goal Financial Standing[Start Risk Survey](#)

 Dashboard Survey

## ACCOUNT PAGES

 Profile

## 1 Question 1: Experience

Is this your first time investing in crypto?

 Yes No

## 2 Question 2: Experience

## 3 Question 3: Goal

## 4 Question 4: Goal

## 5 Question 5: Habit

## 6 Question 6: Habit

## 7 Question 7: Habit

## 8 Question 8: Habit

## 9 Question 9: Habit

 Dashboard Survey

## ACCOUNT PAGES

 Profile

# Very Conservative

Overall Score [-30 to -19]

Your risk tolerance is Very Conservative. This means that you are new to investing in crypto, and have a fear of losing your initial investment. Keep in mind that crypto is way more volatile than most other investment assets but we have created one of the safest diversified crypto portfolios with stable coins to fit your needs. Visit our learning page for some additional knowledge about this market and how you can make further informed decisions to increase your potential gains

[CHECK OUT YOUR NEW PORTFOLIO](#)[REDO SURVEY](#)

 Dashboard Survey

## ACCOUNT PAGES

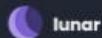
 Profile

# Conservative

Overall Score [-18 to -08]

Your risk tolerance has been evaluated as **Conservative**. This means that although you may know some sounding strategies for investing in general, you still need to work on solidifying some of the fundamental knowledge that could help you in difficult markets. We have provided you with a relatively safe crypto portfolio to start with, hopefully as you stay in this market longer, your risk tolerance will improve overtime. Visit our learning pages to learn more about the crypto market to gain more confidence and maximize future returns.

[CHECK OUT YOUR NEW PORTFOLIO](#)[REDO SURVEY](#)



lunar

Pages / survey



Gary



Dashboard

Survey

ACCOUNT PAGES

Profile



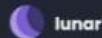
# Moderate

Overall Score [-07 to 5]

Your risk tolerance has been evaluated as Moderate. This means that although you have more to learn to improve your investment strategy and mindset, you are capable of taking on a controlled level of risk. Thus, we will provide you with a portfolio that could fluctuate relatively more aggressively in the short term but has more potential for higher gains in the medium to long term.

[CHECK OUT YOUR NEW PORTFOLIO](#)

[REDO SURVEY](#)



lunar

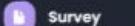
Pages / survey



Gary



Dashboard



Survey

**ACCOUNT PAGES**

Profile



# Aggressive

**Overall Score [6 to 16]**

Your risk tolerance has been evaluated as aggressive. This means that you understand the market and are comfortable with seeing your portfolio fluctuate. Because of this, we will provide one of our more risky crypto portfolios for you to begin with. You will see high short term volatility with this portfolio which means significant losses at times, but it could also yield much higher long term returns.

[CHECK OUT YOUR NEW PORTFOLIO](#)[REDO SURVEY](#)

 Dashboard Survey

## ACCOUNT PAGES

 Profile

# Very Aggressive

Overall Score [17 to 28]

Your risk tolerance has been evaluated as Very Aggressive. This means that you have very sounding techniques and mindset when it comes to investing in general. Although crypto market can be very volatile at times, you know how to react and stike high returns. We are providing you with one of the most risky portfolio to get started with, this portfolio could very often see large fluctuations in value, however, in the medium to long term, we could see exponital returns from this portfolio.

[CHECK OUT YOUR NEW PORTFOLIO](#)[REDO SURVEY](#)

# Hi Gary,

Based on our evaluation of your risk tolerance, we came up with the following diversified crypto portfolio.

## Portfolio Allowcation



	21%
	45%
	12%
	9%

## GROSS BALANCE

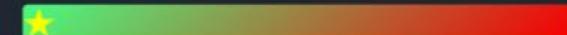
\$10 000

[Portfolio](#)

## Risk Preference

Very Conservative

Your risk tolerance has been evaluated as very conservative. This means that either you are new to investing in crypto, or you have habits that could lead you to massive losses in a risky market.



## Re-evaluate Your Risk Tolerance

You can re-do the risk evaluation survey anytime to make a new diversified crypto portfolio that perfectly fits your risk tolerance levels.

If you want to redo the survey, click the button below and we will take you back.

[Re-evaluate](#)

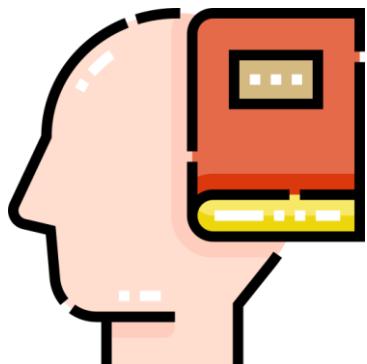
## Historical Performance

(+5%) more in 2021





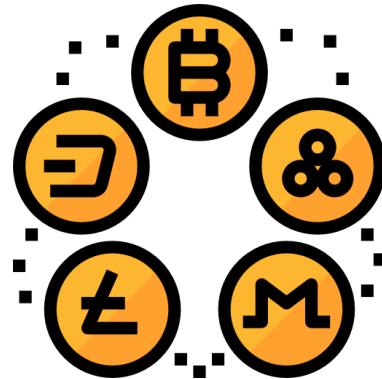
# Problem Causes



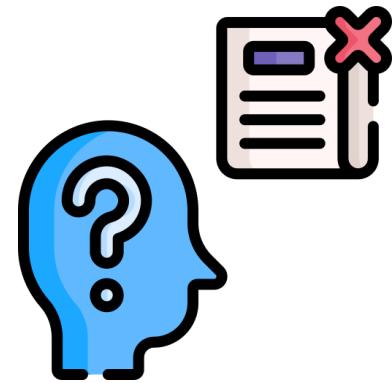
Familiarity



Capital Gain



Choices



Misinformation

# Which Coins to Use?

- Over 4000 different cryptocurrencies exist
- Many don't have a following or trading volume
- Need a way to separate garbage coins and legitimate coins
- Weiss Crypto Rating
  - Long time ratings company founded in 1971
  - Covers over 40,000 stocks, mutual funds and ETFs
  - Weiss Crypto ratings founded in 2018



# Weiss Ratings

- Technology Model
- Adoption Model
- Risk Model
- Momentum Model
- Availability Model
- Liquidity Model
- Include all coins with a C rating or better
- DST updates as Weiss ratings update

Top Coins by Market Cap

Overall Watch Rating	Crypto	Type	Technology/ Adoption Grade	Market Performance Grade	Price	24-Hour Change	24-Hour Volume	Market Cap	7-Day Price History
		Bitcoin (BTC)	Coin	A-	D	\$34,179.18	-1.26% ▼	\$14.80B	\$640.70B
		Ethereum (ETH)	Coin	A	D+	\$2,286.72	-1.02% ▼	\$14.73B	\$266.43B
		Ripple (XRP)	Coin	B-	D	\$0.66924100	-2.68% ▼	\$1.31B	\$66.92B
		Binance (BNB)	Token>Coin	C-	D	\$310.93	1.38% ▲	\$1.20B	\$52.68B
		Cardano (ADA)	Coin	B-	C-	\$1.42	-1.24% ▼	\$792.27M	\$45.86B

+ Code + Text

```
from google.colab import drive
drive.mount('/content/drive')

[ ] import requests
from google.colab import files
import json

COL = {
    "symbol": "symbol",
    "c1": "rating",
    "c2": "currency",
    "c3": "type",
    "c4": "tech_adoption_grade",
    "c5": "market_performance_grade",
    "c6": "price",
    "c7": "day_volume",
    "c8": "market_cap",
    "c9": "day_change"
}

RL = 'https://weisscrypto.com/en/cryptos/screener-query'
params = {'key': 'value'}
= requests.get(url = URL)
response = r.json()
atings = []
or row in response['rows']:
    parsed = {}
    for key in COL.keys():
        if row[key] == '<span class="r-icon-lock r-platin
        parsed[COL[key]] = row[key]
    ratings.append(parsed)
print(ratings)

with open('/content/drive/MyDrive/data/ratings.json', 'w') as f:
    f.write(json.dumps(ratings, indent=4))
```

```
ratings.json
[{"symbol": "BTC", "rating": "B", "currency": "Bitcoin", "type": "Coin", "tech_adoption_grade": "A-", "market_performance_grade": "D", "price": 33687.187966, "day_volume": 14847482671.387321, "market_cap": 631481699780.3824, "day_change": -0.052277581}, {"symbol": "ETH", "rating": "B+", "currency": "Ethereum", "type": "Coin", "tech_adoption_grade": "A", "market_performance_grade": "D+", "price": 2215.868622, "day_volume": 14175306705.995771, "market_cap": 258176442380.35834, "day_change": -0.049990712}, {"symbol": "XRP", "rating": "C+", "currency": "Ripple", "type": "Coin", "tech_adoption_grade": "B-", "market_performance_grade": "D", "price": 0.662528, "day_volume": 1414235353.224845, "market_cap": 66246412179.31059, "day_change": -0.050932338}, {"symbol": "USDT", "rating": "B"}]
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