Slot Reel Design

Solomon's Gambit

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Show your reels here. Show all of your symbols and the frequency of each. You may add or delete rows as needed for the assignment. If you would like to add (or remove) a reel copy and paste the table and add below.

Reel 1

Symbols	Frequency
	3
	2
	7
	6
	1
	4
Total	25

Reel 2

Symbols	Frequency
Witch (W)	2
Solomon Key (SK)	3
Lucifer (L)	7
Michael (M)	1
Grimm (G)	1
Ring (R)	11
Total	25

Reel 3

Symbols	Frequency
Witch	1
Solomon Key	1
Lucifer	3
Michael	5
Grimm	7
Ring	13
Total	30

Reel 4

Symbols	Frequency
Witch	2
Solomon Key	2
Lucifer	7
Michael	1
Grimm	1
Ring	6
Total	19

Reel 5

Symbols	Frequency
Witch	7
Solomon Key	3
Lucifer	1
Michael	1
Grimm	4
Ring	1
Total	17

Payout Matrix

Show your Payout Matrix here. Show all of the winning combinations and what you will pay for them. Add or remove rows as needed.

Winning Combination	Payout
G, G, G, G, G	1116080.357
W, W, W, W, W	372026.7857
SK, SK, SK, SK, SK	868062.5
R, R, R, R, R	9105.550699
L, L, SK, L, L	106293.3673
M, M, SK, M, M	4464321.429
R, L, M, SK, G	27902.00893

Return Calculations

Show all of your calculations for the returns. Add them all up to show the Payout Rate of your system. Clearly mark your progressive and bonus game calculations.

Probability of Five Grimms = (1/25) * (1/25) * (7/30) * (1/19) * (4/17) = 0.000004623323013
Probability of Five Witches = (3/25) * (2/25) * (1/30) * (2/19) * (7/17) = 0.00001386996904
Probability of Five Solomon Keys = (2/25) * (3/25) * (1/30) * (2/19 * (3/17) = 0.000005944272446
Probability of Five Rings = (4/25) * (11/25) * (13/30) * (6/19) * (1/17) = 0.0005666873065
Probability of Four Lucifers and One Solomon's Key = (6/25) * (7/25) * (1/30) * (7/19) * (1/17) = 0.00004854489164
Probability of Four Michaels and One Solomon's Key = (7/25) * (1/25) * (1/30) * (1/19) * (1/17) = 0.000001155830753
Probability of Ring, Lucifer, Michael, Solomon's Key and Grimm = (4/25) * (7/25) * (5/30) * (2/19) * (4/17) = 0.0001849329205

Payout Rate = 0.86 or 86% without Progressive System
Payout = 6 * UnMod * 0.86

Progressive System

Give a brief description of your Progressive System. Make sure the calculations are shown above.

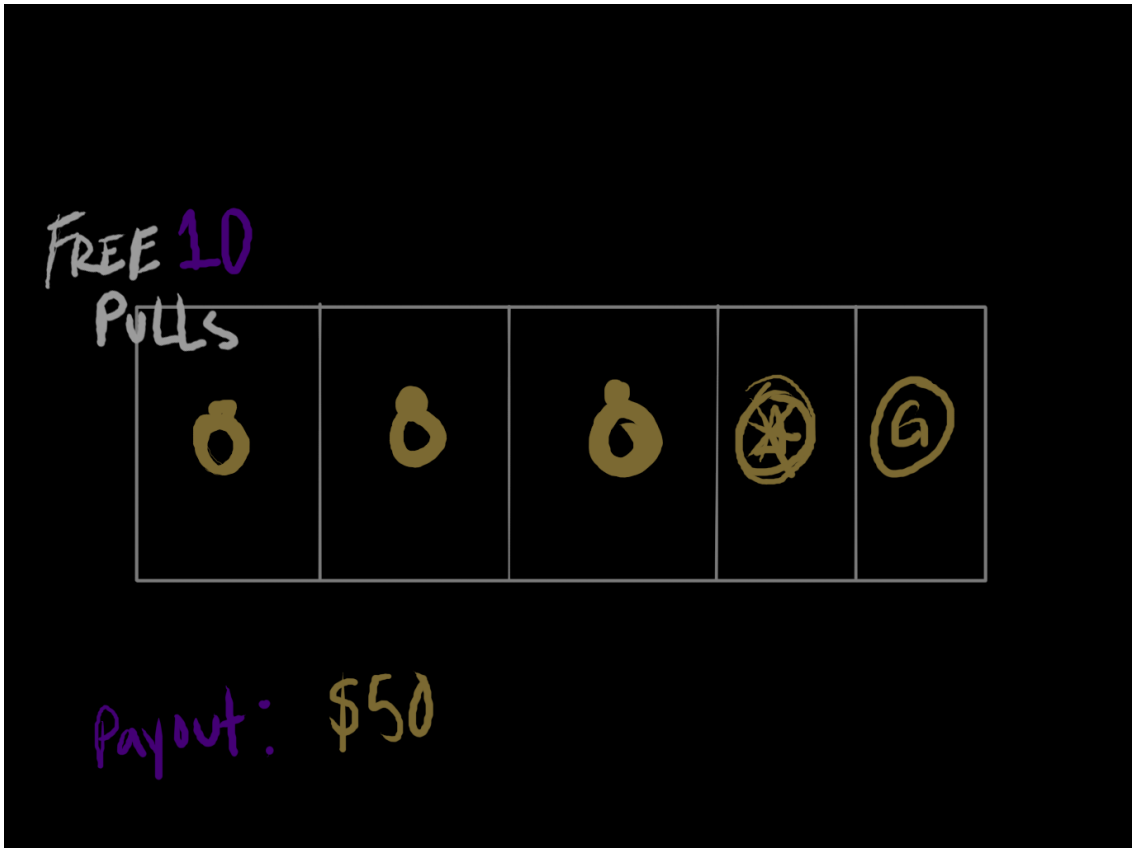
Progressive Payout Rate = Payout Rate (.86) + .13 = .99 = 99%

The progressive system takes 13c from every time the players land on Grimm. The reason for this is that Grimm is a lower tier currency in the underworld. While it's harder to land all Grimms, it should be a bit easier to land four Grimm. This should also incentivise playing more as the player should somewhat be guaranteed a type of return. This is essentially a high stakes slot machine with a relatively low return to keep players on it.

Bonus Game

Describe the design of your bonus game. Use pictures and storyboards to convey the vision. Show all math necessary and make sure it is included in the calculations above.

For the bonus game the player must collect a specific amount of Solomon Keys and then it will unlock these two specific combos of Solomon Keys of three Solomon's Keys and two Rings to play and win the bonus game. When unlocking the bonus game getting three rings and two Solomon keys has a way higher chance to hit which will make the payout a little less but that is what would keep people interested in the Solomon's Gambit slot machine. The bonus game should give out a way smaller base payout to incentivize them to continue playing or somewhat recoup the loss (pairs or threes of rings and keys). In this bonus game, the player has free spins to get any combo-nation of Solomon's Keys and Rings. Keys collected reset after the bonus game.



This is somewhat based on a slot machine game's bonus that I got to play over a year ago.

Probability of Three Solomon Keys and Two Rings = (2/25) * (3/25) * (1/30) * (6/19) * (1/17) = 0.000005944272446

Probability of Three Rings and Two Solomon Keys = (4/25) * (11/25) * (13/20) * (2/19) * (3/17) = 0.0008500309598

Calculations For All Games:
I used the same methodologies as in the Assignment 4 exercises assignment but for the most part there are different values.
https://docs.google.com/spreadsheets/d/1Acy9sohXXV1bFN7KbGt5mRh5w0EZnJpQhyKBh0901lE/edit?usp=sharing