Six Flags Discovery Kingdom is in the northern California Bay Area and is themed after animals. It has 8 roller coasters and many animal exhibits, including many marine animal attractions along with safari animals like lions, giraffes, and elephants, and more. The park was originally an oceanarium that added a land animal park to it, later one it was converted into an amusement park with roller coasters and other small attractions and bought by Six Flags.

Discovery Kingdom currently has 8 coasters. There are 7 steel coasters, 2 of which are inverted, while the rest are sit down, including 1 wooden roller coaster. The 8 coasters are:

- **Boomerang Coast to Coaster**
  - Steel, Sit Down, Made By: Vekoma, 2 inversions:
    - Cobra Roll
    - Loop
- **Cobra**
  - Steel, Sit Down, Made by: Zierer, No inversions
- **Kong**
  - Steel, Inverted, Made By: Vekoma, 3 inversions:
    - Roll Over
    - Sidewinder
    - Double In-Line Twist
- **Medusa**
  - Steel, Sit Down, Made By: B&M, 5 inversions:
    - Dive Loop
    - Zero-G Roll
    - Roll Over
    - Corkscrew (x2)
- **Roadrunner Express**
  - Steel, Sit Down, Made By: Zamperla, Family/Kid ride
- **Roar**
  - Wood, Sit Down, Made By: GCI
- **Superman Ultimate Flight**
  - Steel, Sit Down, Made By: Premier Rides, 2 inversions
    - In-Line Twist
    - Non Inverted Loop
- **V2: Vertical Velocity**
  - Steel, Inverted, Made By: Intamin, Twisted Impulse Coaster

Since Discovery Kingdom did not start out as an amusement park, I believe that the park is lacking a bit in roller coasters, especially since there is only one wooden roller coaster. Also, the park is animal themed and although they name rides after the animals, they do not really theme the rides that much, which is something that is really disappointing.

For my project I want to design a sit down wooden roller coaster that has a jungle theme to add to the park. To make it a themed coaster, in the line I will set a premise for the story, saying that you will
be going on a jungle expedition, and the ride will be enclosed in a building that is themed and is surrounded by trees, so it will also be a surprise as to what exactly it is like, but also not look too boring as a building. Throughout the coaster, it will take the riders through a jungle, which is surrounded by trees and will have mist, and many fake animals. The fact that the coaster is wooden will add to the jungle adventure and wild feel of the ride. The coaster will be relatively simple and small, as there is not a lot of space in the park, but it will have a lot more enjoyment since it will be themed.

As mentioned above, there is not a lot of space in the park so I have decided to use one of the small areas available. The blue area depicts the area where the building would be while, the red is what the track would be like; although it is hard to depict it really from this angle.
Section 1: Lift Hill and First Drop

The First section of the ride will start with a lift hill. During the lift hill there will be a lot a trees and “rainforest sounds” along with quiet yet noticeable sound of running water but no animals yet, as it will build some anticipation of what to come. Once at the top of the lift hill, the sound of water will have gotten louder, and there will be some mist as the coaster goes straight but gains speed (as if on a river) until the drop that will have a large degree of inclination, to make it seem as if it is a waterfall. Once at the bottom the riders will be misted heavily with water, the ride will then immediately go back up another hill.

Top View:

![Top View Image]

Side View:

![Side View Image]
Section 2: Turns and Monkeys

Once back up from the hill, the second hill the rides will start to hear sounds of monkeys. The ride will then take them on a series of fast paced turns and their first encounter of animatronics. In the below picture, the yellow is the above view of the section of track and the turns it will be taking, while the purple circles will be the different clusters of monkey animatronics.

Top View:

![Top View Image]

Section 3: Bunny Hills and Air Time

This section will be a series of three Bunny Hills that will be surrounded by trees. The hills will focus less on the theming and more on the amount of airtime that is provided.

![Section 3 Image]

Section 4: 2nd Lift Hill, Panther, Drop, and Bunny Hills
After the bunny hills there will be another lift hill that is a shorter amount of time than the first one, since you are coming out of bunny hill, but has a lot of trees and a bunch of birds of different kinds that are making a lot of noise. Once you are at the top of the hill, you see less and less birds and hear a lot of bird flying away and there is little to no background noise coming from the animals that had been present the entire ride. There is a turn and you start to hear a low grumble, and then another turn which reveals a Panther that swipes its paw at the train along with a Panther noise when the train suddenly drops. The drop then leads into three more bunny hills, and which takes the riders back to the station. In the picture below, the yellow is the lift hill, the green is once the train is on the top of the lift hill and the part with turns, the brown is the drop, the orange are the three bunny hills, and lastly the pink circle is panther.

Top View:
Six Flags: Discovery Kingdom

- San Francisco Bay Area
- Animal Exhibits
- 8 roller coasters
  - 7 steel
  - 1 wooden
Six Flags: Discovery Kingdom

- Lacking in themed coasters
- Needs another wooden coaster
Jungle Adventure: Location
Jungle Adventure: Layout
Jungle Adventure: Layout
Jungle Adventure: Layout
Jungle Adventure: Layout
Jungle Adventure: Stats

- Height: 75ft (lift hill)

- Max G-Forces:
  - Positive: 2.5  Negative: 1  Lateral: 1.5
  - Acceleration: 1  Deceleration: 1

- 2 trains, 10 cars each, 2 people per car
Jungle Adventure: Calculations

- Height: 75ft (23m), Velocity at top: 4.5 m/s
  - \( V = (4.5^2 + 2 \times 9.8 \times 23)^{1/2} = 21.7 \text{ m/s (48.5 mph)} \)

- Estimated Duration: 2:30 min (180s)

- Capacity: \( \frac{3600}{180} \times 2 \times 10 \times 2 = 800 \text{ riders per hour} \)

- Radius of Hill: \( \frac{21^2}{1.5 \times 9.8} = 30 \text{ m (98 ft)} \)

- Radius of Turn: \( \frac{15^2}{1.5 \times 9.8} = 15 \text{ m (49 ft)} \)
Jungle Adventure: Estimations

- Length: 3,000 ft

- Cost:
  - Coaster: $10 million (outlaw run)
  - Theming: $5 million
  - Building/Pathway: $5 million
  - Total: $20 million
Thanks