**Technical Document**

**For**

**Horse Race Simulation  
Prepared By,  
Vigraman Padmanaban**

Table of Contents

[*1.* *Introduction to Simulated Horse race:* 3](#_Toc527706071)

[*2.* *Race Input data* 3](#_Toc527706072)

[*3.* *Speed calculation* 3](#_Toc527706073)

[*4.* *Endurance calculation* 3](#_Toc527706074)

[*5.* *Race statistics* 3](#_Toc527706075)

[6. *Webpage* *Requirements*: 4](#_Toc527706076)

[*7.* *Software Requirements:* 4](#_Toc527706077)

[8. *Practical Inference:* 4](#_Toc527706078)

# *Introduction to Simulated Horse race:*

This project involves up to three consecutive Horse race simulations happening among 8 horses. For this race, we have three entities or stats for each horse which are speed, endurance and strength. The race distance covers 1500 meters. And the end of the three consecutive races the best horse is crowned and the second and third horses are shown in the statistics as output. The results can be viewed for multiple users.

# *Race Input data*

As discussed in the introduction, for each horse there are three entities which are the important factors for the horse to win. The speed, endurance and strength are computer generated values ranging from 0.0 to 10.0 using the random number generator. Each horse is named as Horse1, Horse2… to Horse8 to show which horse win the race.

# *Speed calculation*

This section describes how the speed of the horse is calculated. As we have described earlier, the value of speed for each horse is randomly generated. To maintain a minimum base speed for each horse (as per the requirements received) we are adding a base speed of 5m/s to the stat speed.

Speed calculation = Base speed of 5 meters/sec + Stat Speed

# *Endurance calculation*

This section describes how the endurance of the horse is calculated. As we have described earlier, the value of endurance for each horse is randomly generated. Endurance denotes the hundreds of meters the horse can run at their best speed. There is a factor that affects this endurance, which is the weight of the jockey. This happens only when the horse reach its endurance stat.

Endurance Distance calculation

= (distance covered by horse – maximum speed distance) – (5\*10- seconds in which reached maximum speed)) + (Strength stat \* (8 /100))

# *Race statistics*

For every race the performance of each horse can be measured in a time interval of 10 seconds. In the race a check is made to avoid the random number generator not to generated ‘0’ value for the entities. Upon the completion of each race the position of the race winners are shown for each race. The race is carried out list all the horses complete the race distance of 1500 meters. After the completion of up to three races a final statistical report is displayed showing which horse performed well among the three races covers the destination with minimum time. Also, the race shows the any currently running race, with time, horse position and distance covered.

# *Webpage* *Requirements*:

The first page should contain a ‘create a race’ button which creates a race with 8 horses. In the race page, we have a progress button, where the progress denotes the race statistics in a time lapse of 10 seconds. Each horse progresses in the race till the destination of 1500 meters is reached.

# *Software Requirements:*

PHP, MySQL

# *Practical Inference:*

In this section, we will discuss the practical difficulties with the simulator and the fixes provided. Sometimes the random generator can generate same values for two horses and that will lead in making the two horses reach the destination at the same time. To avoid that a check is made to generate non- identical values for the stats or entities.

Within an interval of 10 seconds, more than one horse can finish the end of race line. So the calculation of exact time when the winning horse crosses 1500 meters is important to announce the winner.

**Screenshots:**



