
Research in Collective Intelligence through Horse Racing in Hong Kong

LYU1604

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Introduction

Technical support

System Architecture

Design and Implementation

Algorithm

Limitation

Crowdsourcing

Collective Intelligence

Introduction

What is crowdsourcing?

General-purpose problem-solving method

Type of participative online activity



Introduction

What is collective intelligence?

One of the application in crowdsourcing

Collect and combine information from two or more people



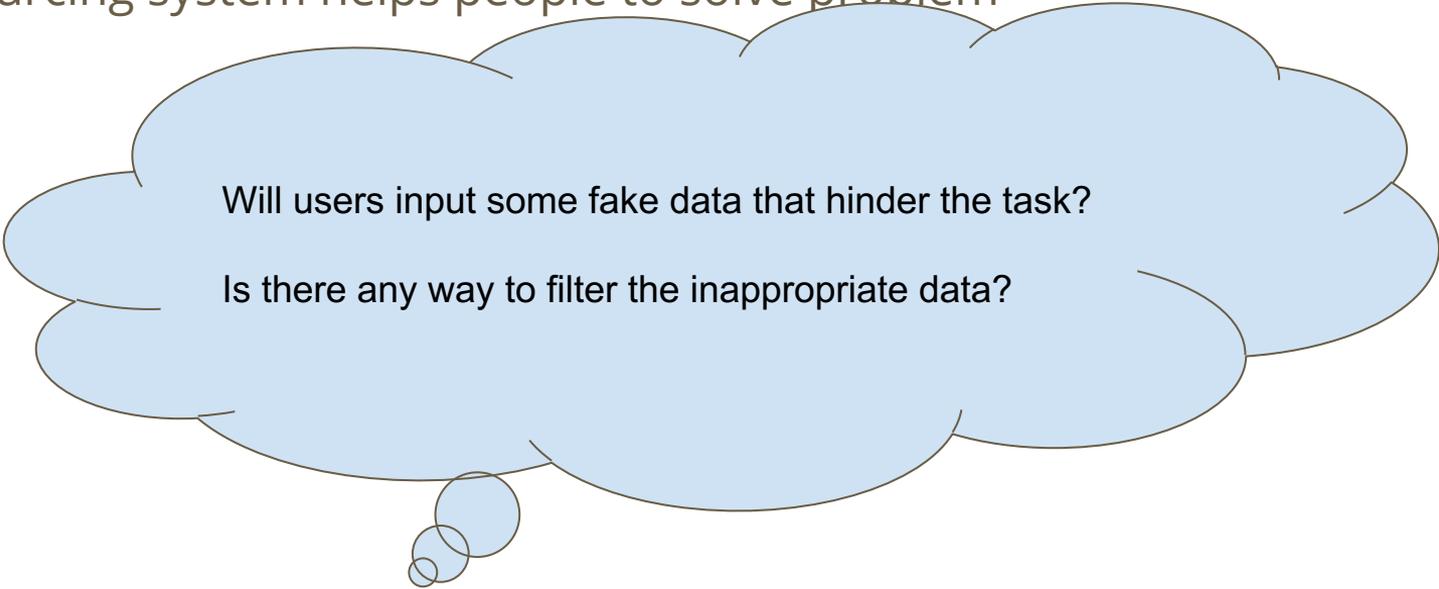
Provide solution to a specific problem



Motivation

Crowdsourcing is a hot topic

Crowdsourcing system helps people to solve problem



Will users input some fake data that hinder the task?

Is there any way to filter the inappropriate data?

Motivation

Conduct an experiment

find a good way to measure data provided by user

wisdom of crowd > single member's decision?



Why horse racing?

it provides discrete result, unlike stock market

results are changable, more difficult to predict

Objective

design a voting system to let user predict horse racing result

design an algorithm to analyze the data

provide horse tips

Technical Support

Back-end development

phpMyAdmin

database for storing data and user information

user-friendly platform

Front-end development

Dreamweaver

proprietary web development tool

some useful function: Live View, Check Page



System Architecture

Client

Server



A cartoon character representing the PHP programming language. It has a blue, rounded body with a white face, large eyes, and a small blue arrow-like tail. The character is wearing a blue shirt with the letters 'php' written on it in a stylized, white-outlined font. The background is white with a faint, light blue outline of the character's body.

Why PHP?

Simple and easy to learn

Support

Freedom

Free

Fast

HELLO GUEST!

Member Login

Username

Password

Remember me

Login

Not a member yet? Sign Up!

User Name

Email

Password

Register

HOT HORSE: 1. BOLSHOI BALLE
2. FOXBAT
3. CATCHMEIFYOUCAN

PREDICT NOW!

1 2 3 4 5 6

Race

2016-11-20

No.	Horse	Draw	Jockey	Trainer	win	place
1	BOLSHOI BALLE	3	S Clipperton	D J Hall	■ 26.0	■ 5.5
2	SEA JADE	7	T Berry	J Moore	■ 5.2	■ 2.1
3	REGENCY BO BO	13	N Callan	A S Cruz	■ 3.6	■ 1.9
4	CATCHMEIFYOUCAN	6	D Whyte	W Y So	■ 39.0	■ 8.3



1 2 3 4 5 6

Race

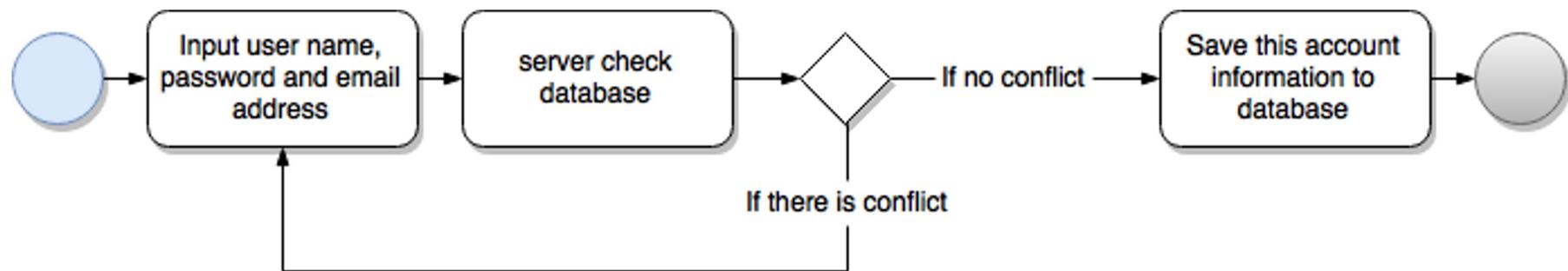
2016-11-20

No.	Horse	Draw	Jockey	Trainer	win	place
1	BOLSHOI BALLET	3	S Clipperton	D J Hall	■26.0	■5.5
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4	CATCHMEIFYOUCAN	6	D Whyte	W Y So	■39.0	■8.3
5	FOXBAT	10	K Teetan	P F Yiu	■22.0	■3.1
6	JUMBO LUCK	5	B Prebble	K W Lui	■15.0	■4.8
7	MONEY BOY	12	J Moreira	J Size	■3.9	■2.0
8	FOREVER ACCURATE	8	Z Purton	C H Yip	■10.0	■3.1
9	LONDON CITY	4	S de Sousa	K L Man	■19.0	■4.4
10	EMPIRE OF MONGOLIA	9	C Y Ho	C S Shum	■61.0	■11.0
11	AGIAAL	14	O Murphy	A Lee	■43.0	■8.5
12	AUDACITY	1	T H So	L Ho	■73.0	■11.0
13	WINNING BOY	11	C Schofield	R Gibson	■14.0	■3.2
14	IMPERIAL SEAL	2	M Chadwick	C Fownes	■20.0	■5.8

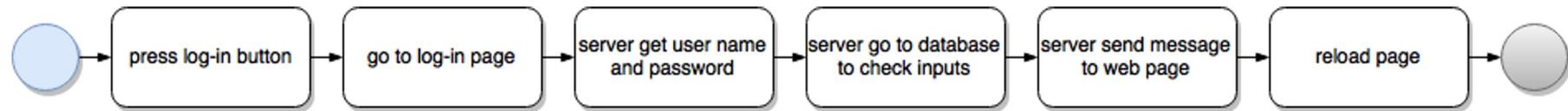
Submit



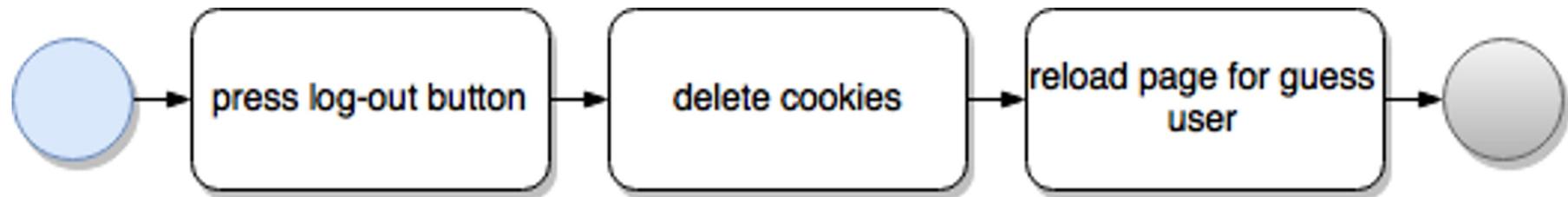
Create Account



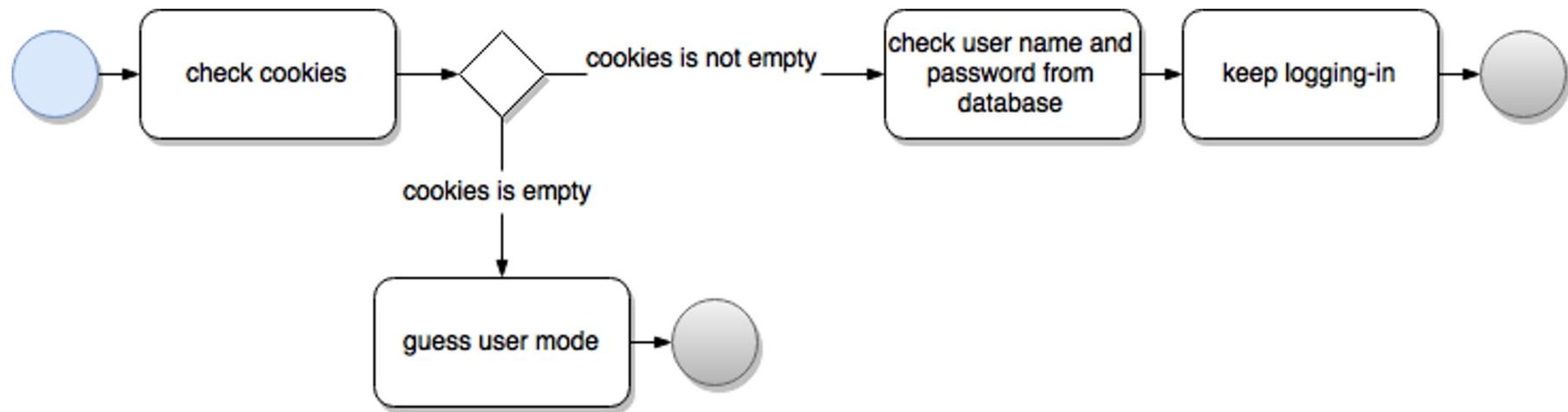
Log-in



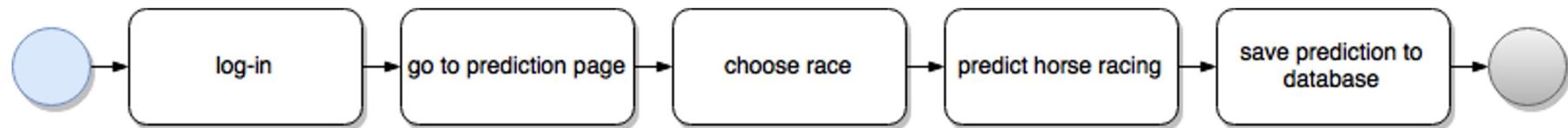
Log-out



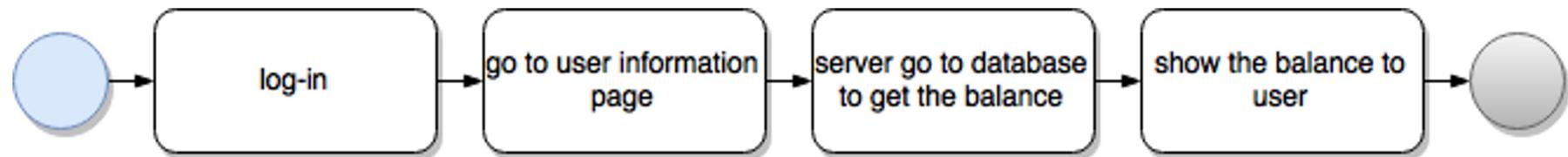
Check Log-in status



Predict Horse Racing



Check Balance



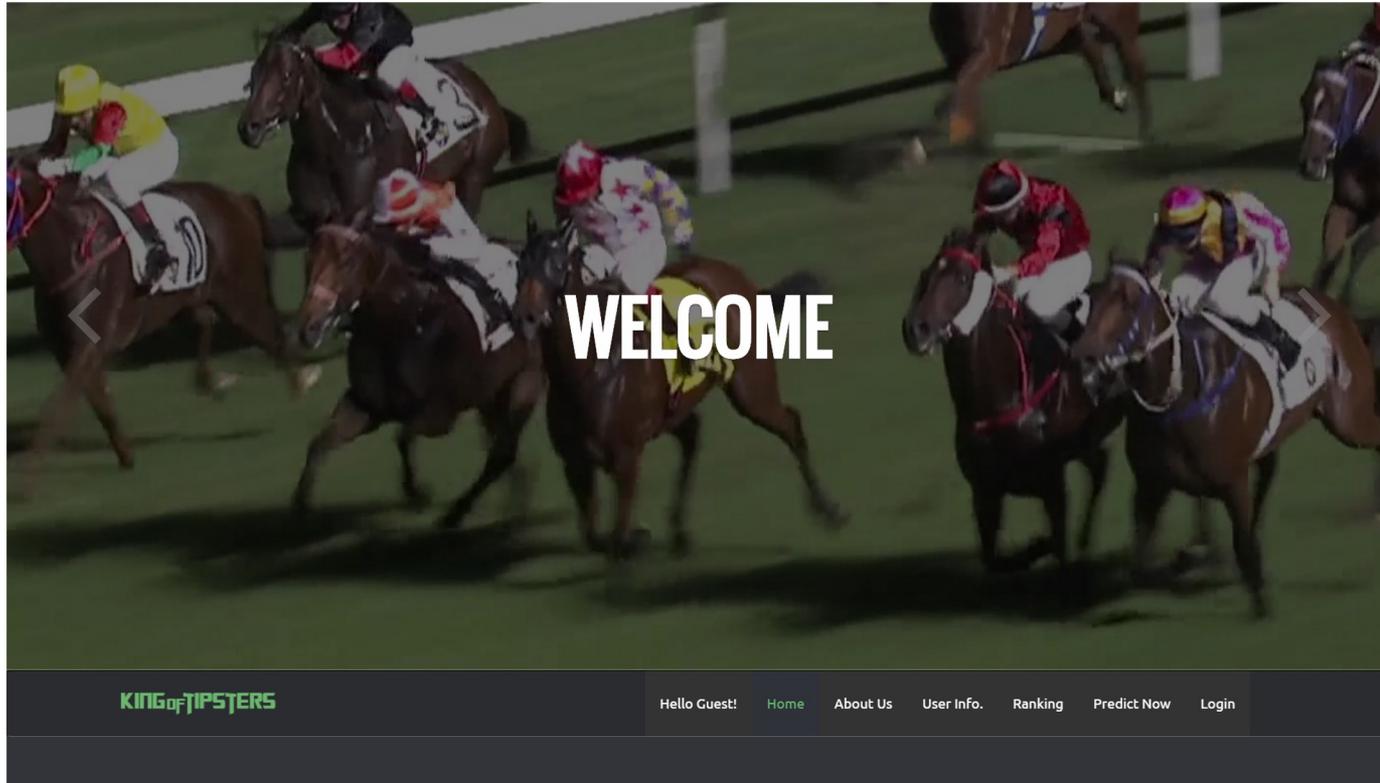
Design and Implementation

```
user(user_id: integer, user_name: varchar,  
password: text, email: varchar, win_rate: double,  
balance: double, regIP: varchar, date_time:  
timestamp)
```

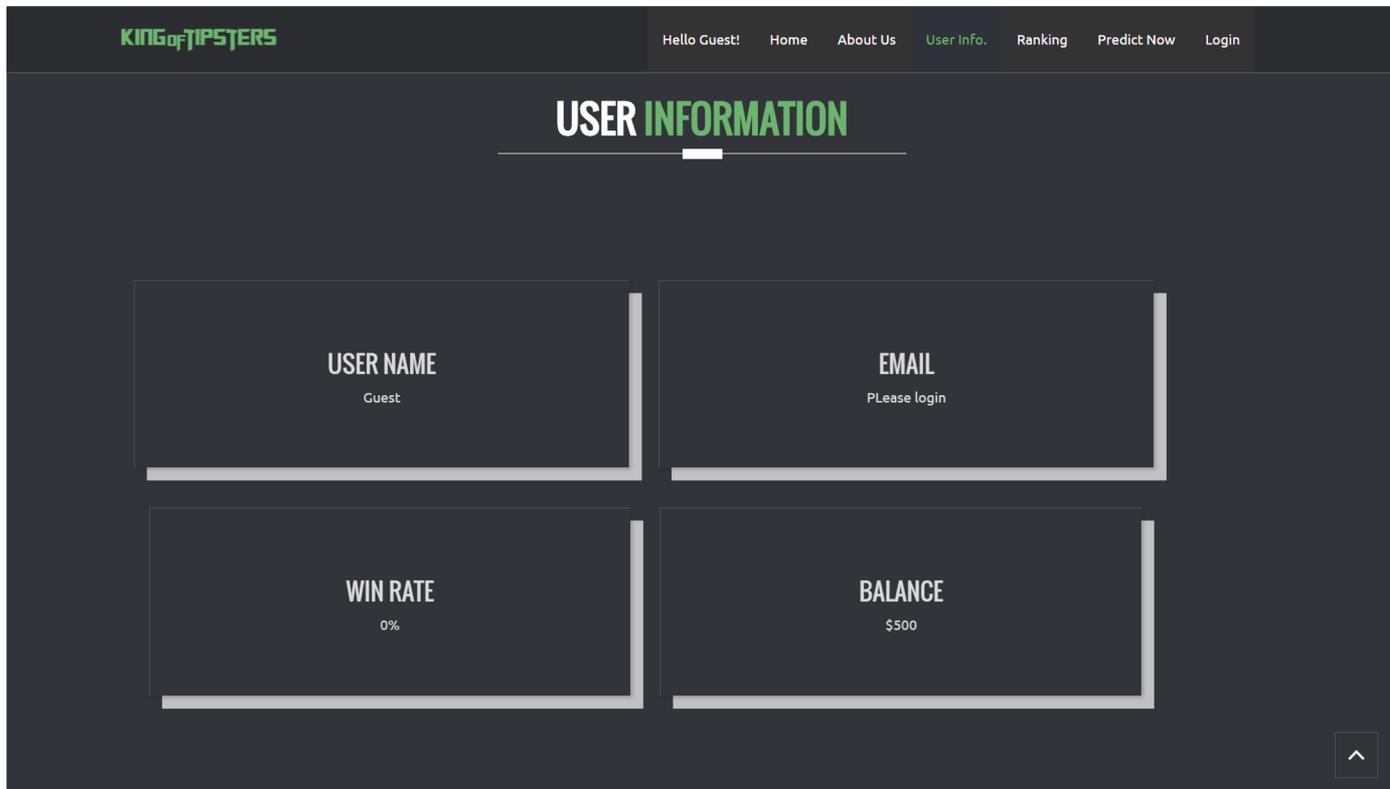
```
buy_record(buy_record_id: int, buy_date_time:  
timestamp, user_id: int, amount: int, race_date:  
date, race_id: int, win: text, place1: text, place2:  
text, place3: text, earn_money: double)
```



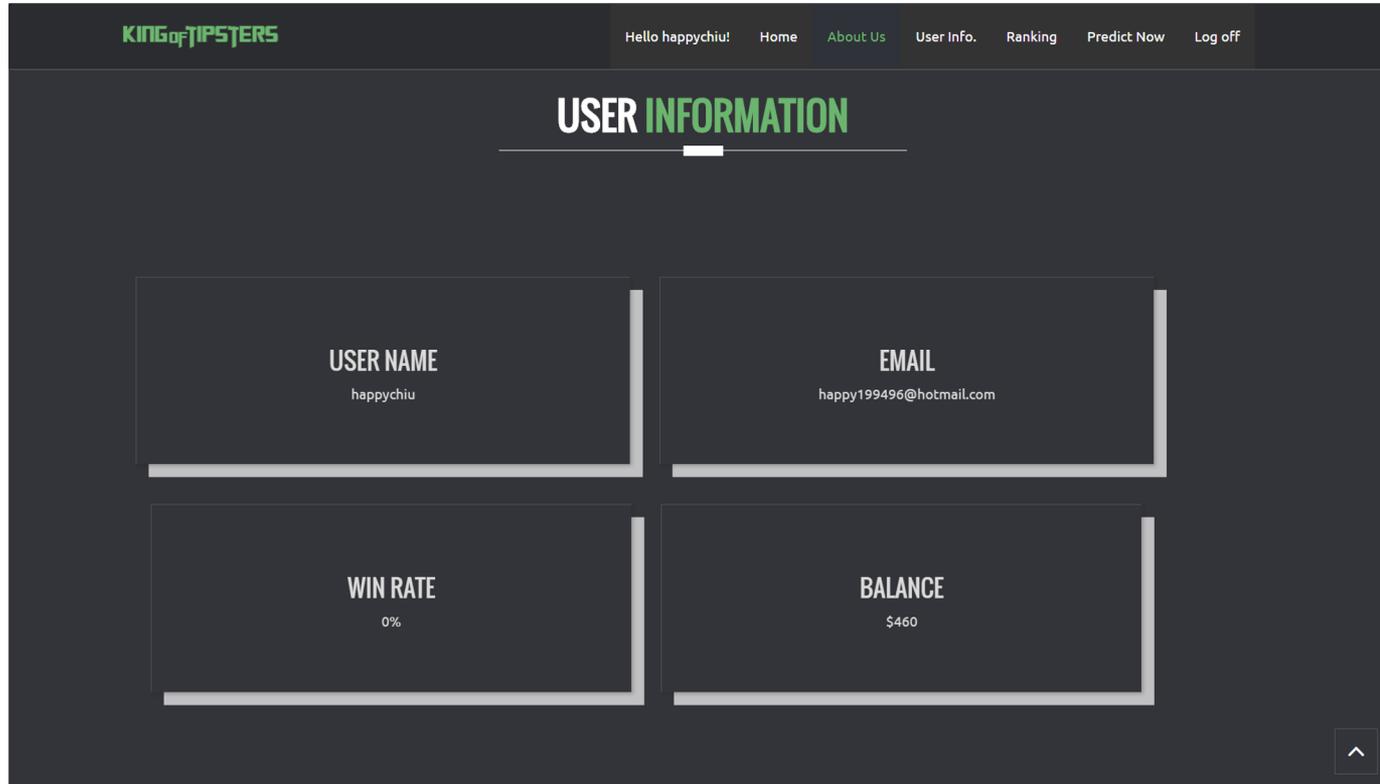
User Interface Design



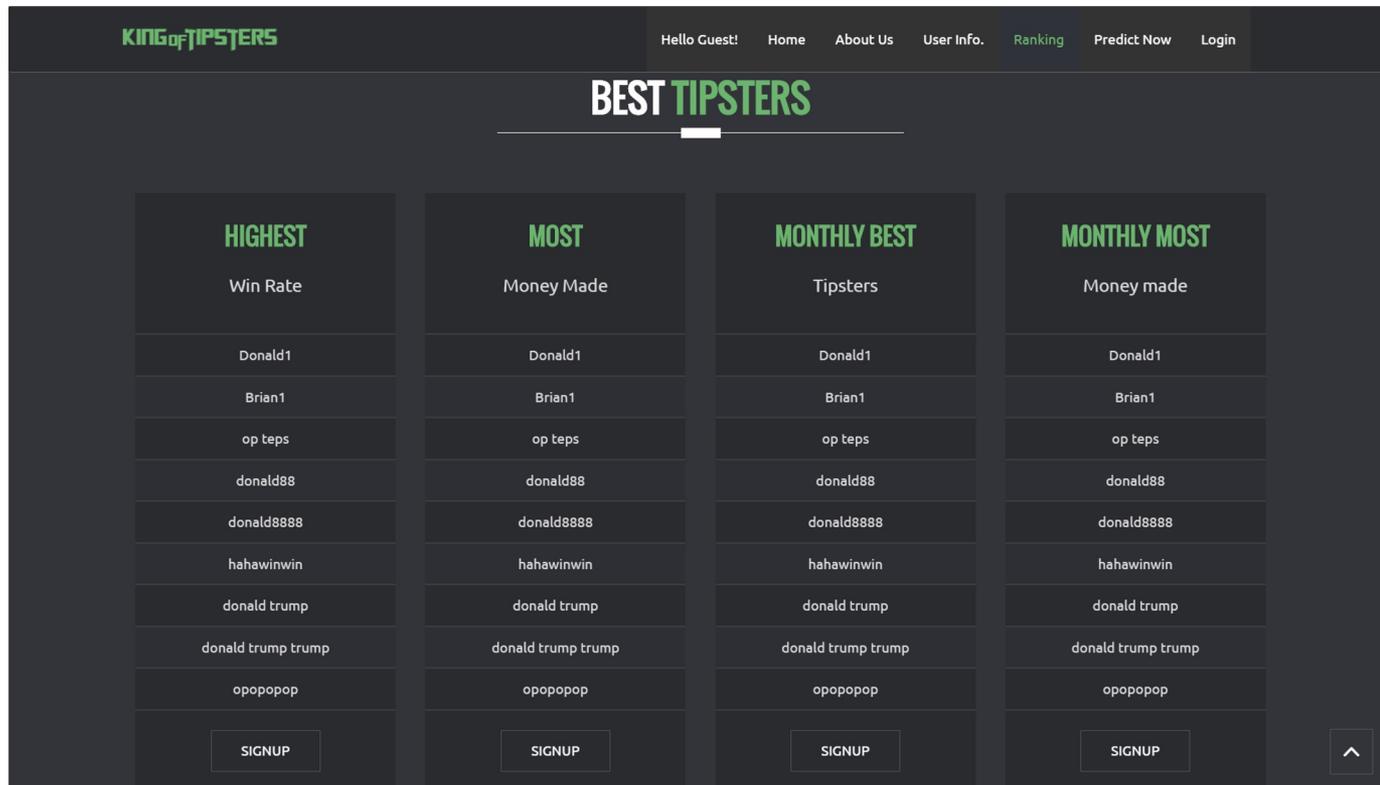
User Interface Design



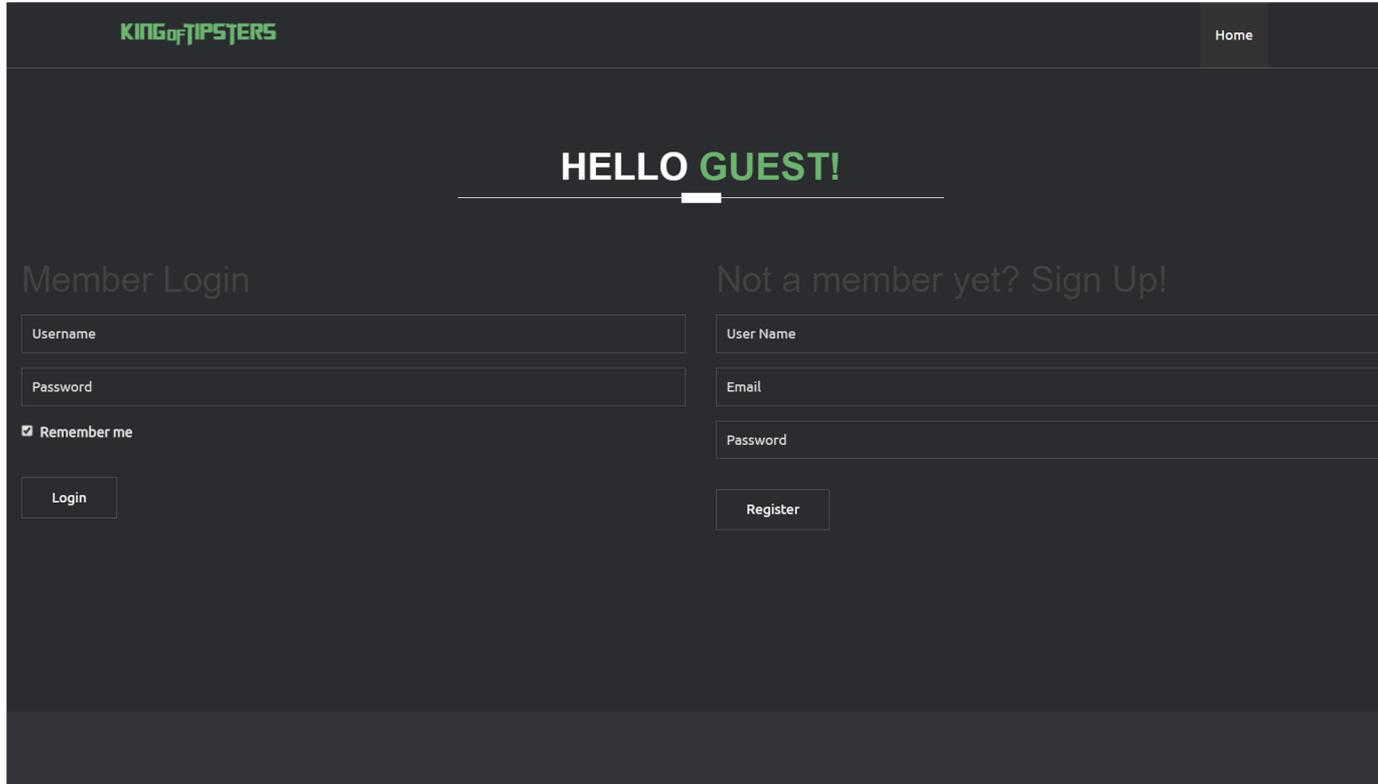
User Interface Design



User Interface Design



User Interface Design



The image shows a dark-themed user interface for a website called "KINGofTIPSTERS". The header includes the brand name in green and a "Home" link. The main content area features a "HELLO GUEST!" greeting. Below this, there are two columns: "Member Login" and "Not a member yet? Sign Up!". The login column has fields for "Username" and "Password", a "Remember me" checkbox, and a "Login" button. The sign-up column has fields for "User Name", "Email", and "Password", and a "Register" button.

KINGofTIPSTERS Home

HELLO GUEST!

Member Login

Username

Password

Remember me

Login

Not a member yet? Sign Up!

User Name

Email

Password

Register

User Interface Design

The screenshot shows a dark-themed website for 'KING OF JUMPSTERS'. The top navigation bar includes a user greeting 'Hello happychiu!' and links for 'Home', 'About Us', 'User Info.', 'Ranking', 'Predict Now', and 'Log off'. The main content area features a large text display of race results: 'HOT HORSE: 1. BOLSHOI BALLET', '2. FOXBAT', and '3. CATCHMEIFYOUCAN'. Below this is a prominent 'PREDICT NOW!' button with a white underline. At the bottom, there is a section for 'Race 1 2 3 4 5 6' dated '2016-11-20', which contains a table of race details. A small upward-pointing arrow button is visible in the bottom right corner of the race section.

KING OF JUMPSTERS

Hello happychiu! Home About Us User Info. Ranking Predict Now Log off

HOT HORSE: 1. BOLSHOI BALLET
2. FOXBAT
3. CATCHMEIFYOUCAN

PREDICT NOW!

Race 1 2 3 4 5 6

2016-11-20

No.	Horse	Draw	Jockey	Trainer	win	place
1	BOLSHOI BALLET	3	S Clipperton	D J Hall	■ 26.0	■ 5.5
2	SEA JADE	7	T Berry	J Moore	■ 5.2	■ 2.1
3	REGENCY BO BO	13	N Callan	A S Cruz	■ 3.6	■ 1.9
4	CATCHMEIFYOUCAN	6	D Whyte	W Y So	■ 39.0	■ 8.3

User Interface Design

KING of TIPSTERS Hello happychiu! Home About Us User Info. Ranking Predict Now Log off

Rece 1 2 3 4 5 6

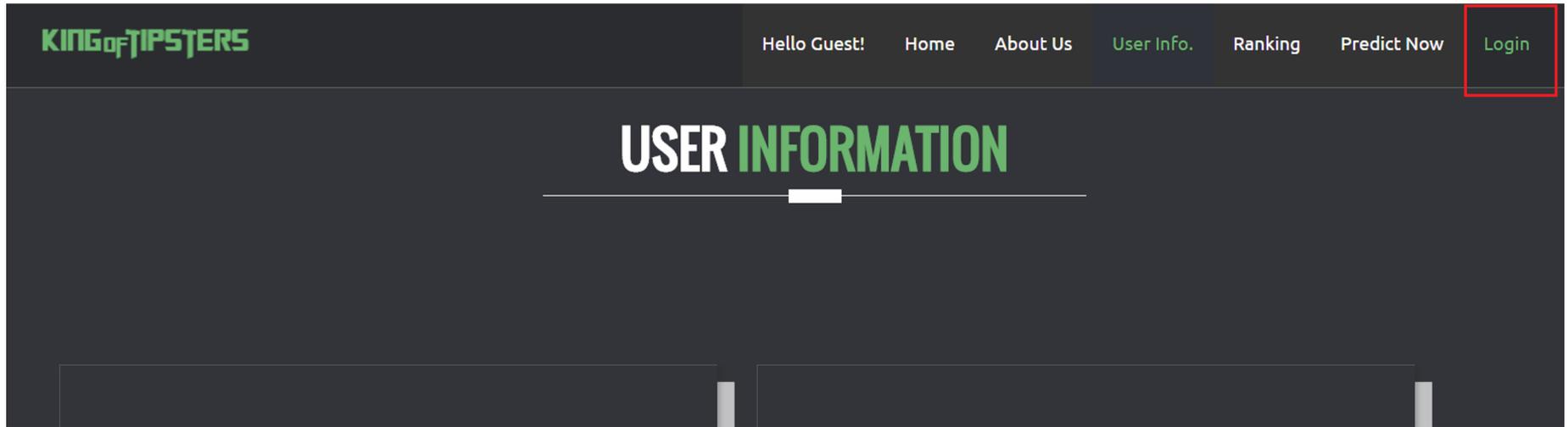
2016-11-20

No.	Horse	Draw	Jockey	Trainer	win	place
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4	CATCHMEIFYOUCAN	6	D Whyte	W Y So	■ 39.0	■ 8.3
5	FOXBAT	10	K Teetan	P F Yiu	■ 22.0	■ 3.1
6	JUMBO LUCK	5	B Prebble	K W Lui	■ 15.0	■ 4.8
7	MONEY BOY	12	J Moreira	J Size	■ 3.9	■ 2.0
8	FOREVER ACCURATE	8	Z Purton	C H Yip	■ 10.0	■ 3.1
9	LONDON CITY	4	S de Sousa	K L Man	■ 19.0	■ 4.4
10	EMPIRE OF MONGOLIA	9	C Y Ho	C S Shum	■ 61.0	■ 11.0
11	AGIAAL	14	O Murphy	A Lee	■ 43.0	■ 8.5
12	AUDACITY	1	T H So	L Ho	■ 73.0	■ 11.0
13	WINNING BOY	11	C Schofield	R Gibson	■ 14.0	■ 3.2
14	IMPERIAL SEAL	2	M Chadwick	C Fownes	■ 20.0	■ 5.8

Submit

^

Functionality - Registration



Functionality - Registration

HELLO GUEST!

Not a member yet? Sign Up! ¹

User Name

Email

Password

Register ²

Functionality - Registration

Not a member yet? Sign Up!

Your username must be between 3 and 32 characters!
Your email is not valid!

hi

a@a

....

Register

Not a member yet? Sign Up!

This username is already taken!

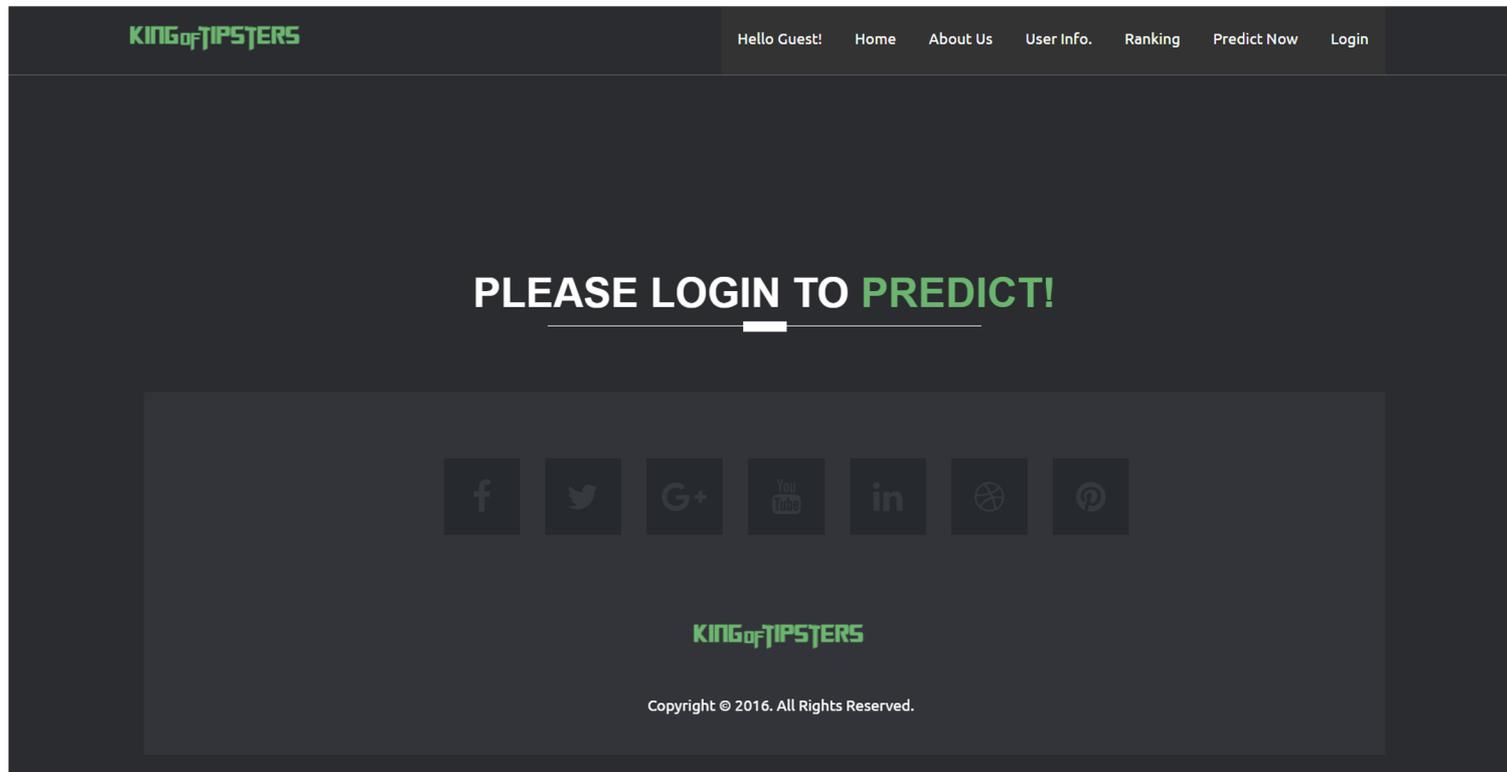
testuser

yoyoyo@yahoo.com

.....

Register

Functionality - Login



Functionality - Login

KINGofTIPSTERS

Hello Guest!

[Home](#)

[About Us](#)

[User Info.](#)

[Ranking](#)

[Predict Now](#)

[Login](#)

USER INFORMATION

Functionality - Login

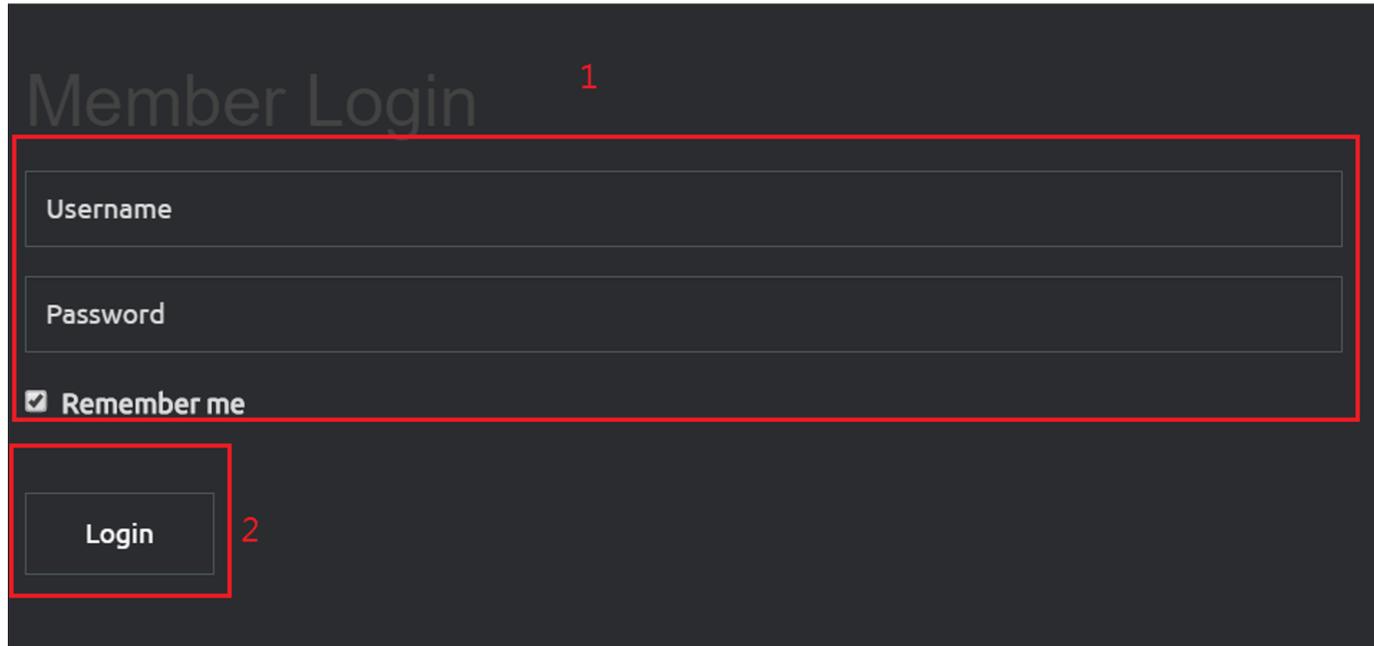
Member Login 1

Username

Password

Remember me

Login 2

A dark-themed login form titled "Member Login" with a red "1" next to it. The form contains three input fields: "Username", "Password", and a checked checkbox labeled "Remember me". Below these fields is a "Login" button, which is highlighted with a red box and a red "2" next to it.

Functionality - Login

The screenshot shows a user interface for 'KING OF TIPSTERS'. The top navigation bar includes 'Hello testuser!', 'Home', 'About Us', 'User Info.', 'Ranking', 'Predict Now', and 'Log off'. The main heading is 'USER INFORMATION'. Below this, there are four data cards: 'USER NAME' (testuser), 'EMAIL' (testuser@link.cuhk.edu.hk), 'WIN RATE' (0%), and 'BALANCE' (\$500). A red box highlights the 'Hello testuser!' and 'Log off' buttons, and another red box highlights the 'USER INFORMATION' heading and the four data cards.

KING OF TIPSTERS

Hello testuser! Home About Us User Info. Ranking Predict Now Log off

User name

USER INFORMATION

USER NAME testuser	EMAIL testuser@link.cuhk.edu.hk
WIN RATE 0%	BALANCE \$500

Functionality - Login

Member Login

Wrong username and/or password!

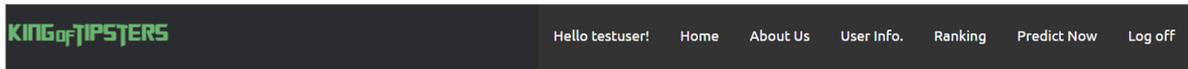
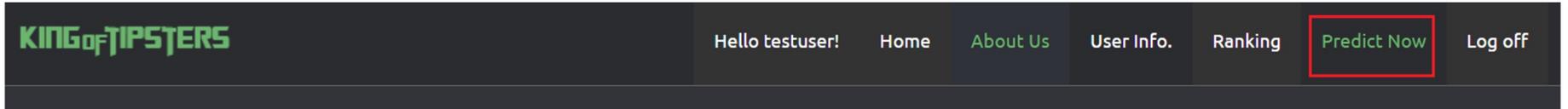
testuser

.....

Remember me

Login

Functionality - Prediction



HOT HORSE: 1.BOLSHOI BALLET 2.FOXBAT
3.CATCHMEIFYOUCAN

PREDICT NOW!

Race

2016-11-20

No.	Horse	Draw	Jockey	Trainer	win	place
1	BOLSHOI BALLET	3	S Clipperton	D J Hall	■ 26.0	■ 5.5
2	SEA JADE	7	T Berry	J Moore	■ 5.2	■ 2.1

Functionality - Prediction

KING OF TIPSTERS

Hello testuser! Home About Us User Info. Ranking Predict Now Log off

2016-11-20

No.	Horse	Draw	Jockey	Trainer	win	place
1	BOLSHOI BALLET	3	S Clipperton	D J Hall	<input checked="" type="checkbox"/> 26.0	<input type="checkbox"/> 5.5
2	SEA JADE	7	T Berry	J Moore	<input type="checkbox"/> 5.2	<input checked="" type="checkbox"/> 2.1
3	REGENCY BO BO	13	N Callan	A S Cruz	<input type="checkbox"/> 3.6	<input checked="" type="checkbox"/> 1.9
4	CATCHMEIFYOUCAN	6	D Whyte	W Y So	<input type="checkbox"/> 39.0	<input type="checkbox"/> 8.3
5	FOXBAT	10	K Teetan	P F Yiu	<input type="checkbox"/> 22.0	<input type="checkbox"/> 3.1
6	JUMBO LUCK	5	B Prebble	K W Lui	<input type="checkbox"/> 15.0	<input type="checkbox"/> 4.8
7	MONEY BOY	12	J Moreira	J Size	<input type="checkbox"/> 3.9	<input checked="" type="checkbox"/> 2.0
8	FOREVER ACCURATE	8	Z Purton	C H Yip	<input type="checkbox"/> 10.0	<input type="checkbox"/> 3.1
9	LONDON CITY	4	S de Sousa	K L Man	<input type="checkbox"/> 19.0	<input type="checkbox"/> 4.4
10	EMPIRE OF MONGOLIA	9	C Y Ho	C S Shum	<input type="checkbox"/> 61.0	<input type="checkbox"/> 11.0
11	AGIAAL	14	O Murphy	A Lee	<input type="checkbox"/> 43.0	<input type="checkbox"/> 8.5
12	AUDACITY	1	T H So	L Ho	<input type="checkbox"/> 73.0	<input type="checkbox"/> 11.0
13	WINNING BOY	11	C Schofield	R Gibson	<input type="checkbox"/> 14.0	<input type="checkbox"/> 3.2
14	IMPERIAL SEAL	2	M Chadwick	C Fownes	<input type="checkbox"/> 20.0	<input type="checkbox"/> 5.8

Submit

Functionality - Prediction

USER INFORMATION

USER NAME

testuser

EMAIL

testuser@link.cuhk.edu.hk

WIN RATE

0%

BALANCE

\$460

Rating a User



Rate by Win Rate

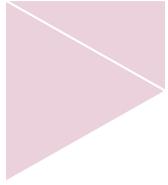
>40%



Rate by Balance

>\$500





Bonus Rate for High Ranking Users

Rank	1	2	3	4	5	6	7	8	9	10
Bonus	20	19	18	17	16	15	14	13	12	11



Suggestion of horses



Score = $\left(\text{WinRate} + \frac{\text{Balance} - 500}{1000} \right) \times \text{BonusForTopUsers}$

User No.1

Win Rate 65%

Balance \$600

Not Best Tipsters

Win Prediction : Horse No.3

Place Prediction : Horse No.3 & Horse No.5

Horse no.	1	2	3	4	5	6	7	8
Score	0	0	1.5	0	0.75	0	0	0

User No.2

Win Rate 39%

Balance \$480

Not Best Tipsters

Win Prediction : Horse No.4

Place Prediction : Horse No.4 & Horse No.8

Horse no.	1	2	3	4	5	6	7	8
Score	0	0	1.5	0	0.75	0	0	0

User No.3

Win Rate 36%

Balance \$1100

Best Tipsters Ranking : 3

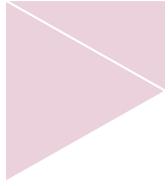
Win Prediction : Horse No.1

Place Prediction : Horse No.1, No.5, No. 8

Horse no.	1	2	3	4	5	6	7	8
Score	34.56	0	1.5	0	18.03	0	0	17.28

A group of jockeys on horses racing on a green field. The jockeys are wearing colorful silks and helmets. The horses are in full gallop, and the background is a blurred green landscape.

Suggestions :
Horse No.1
Horse No.5
Horse No.8



Limitation

Number of Users

Thank You

