

# Class Based Modeling

## Class Based Modelling Concept

Class-based modeling represents the objects that the system will manipulate, the operations that will be applied to the objects, relationships between the objects and the collaborations that occur between the classes that are defined.

## Identifying analysis classes

Classes are identified by underlining each noun or noun phrase and plotting it into a simple table. If the class (noun) is required to implement a solution, then it becomes a part of the solution space. Otherwise if the noun is used only to describe a solution, it is regarded as a part of the problem space. Once all the nouns have been isolated, General classification and Selection is done.

### Identified Noun:

Serial No	Noun
1.	Website
2.	Features
3.	Countries
4.	World
5.	Real time chatting system
6.	Quiz
7.	Platform
8.	Modules
9.	Countries
10.	Ocean & Seas
11.	Chat
12.	Application

13.	Tabs
14.	User
15.	Account
16.	Admin
17.	Information
18.	Registration
19.	User information
20.	Full Name
21.	User Name
22.	Email id
23.	Country
24.	Password
25.	Option
26.	Password recovery
27.	OTP
28.	General facts
29.	Population
30.	Capital
31.	Official Language
32.	History
33.	Culture
34.	Literature
35.	Music
36.	Sports
37.	Football

38.	Forms of Government
39.	Communism
40.	Monarchy
41.	Tourist destinations
42.	Pictures
43.	Unions
44.	SAARC
45.	ASEAN
46.	GCC
47.	Nordic countries
48.	Baltic countries
49.	Unmarked map
50.	Physiographic
51.	Geologic features
52.	Economic aspects
53.	Multiple choice question
54.	Predefined questions
55.	Options
56.	Gaming quiz
57.	Location
58.	Screen
59.	XP Points
60.	Rounds
61.	Leaderboard
62.	Cricket

63.	Playing nations
64.	Map
65.	Achievements
66.	Top scorer
67.	Sports players
68.	Month
69.	Dashboard
70.	Active users
71.	Text messages
72.	Registered user
73.	Active status
74.	Level
75.	Score

### Identified Verb:

Serial No	Verb
1.	consist
2.	offer
3.	include
4.	learn
5.	register
6.	provide

7.	reset
8.	find
9.	click
10.	see
11.	choose
12.	mark
13.	show
14.	follow
15.	see
16.	play
17.	guess
18.	click
19.	gain
20.	complete
21.	Level up
22.	send
23.	accept
24.	sign_up

25.	login
26.	chat
27.	deny
28.	set
29.	generate
30.	update

### List of Nouns in Solution Space:

Serial No	Noun
1.	Website
2.	Application
3.	User
4.	Registered User
5.	Account
6.	Admin
7.	Information
8.	Profile
9.	Registration
10.	Option
11.	Password
12.	OTP
13.	Email

14.	General facts
15.	Population
16.	Capital
17.	Official Language
18.	History
19.	Culture
20.	Literature
21.	Music
22.	Sports
23.	Football
24.	Cricket
25.	Nations
26.	Map
27.	Achievements
28.	Players
29.	Forms of Government
30.	Communism
31.	Monarchy
32.	Travel
33.	Tourist Destinations
34.	Pictures
35.	Unions
36.	SAARC
37.	ASEAN

38.	GCC
39.	Nordic countries
40.	Baltic countries
41.	Ocean
42.	Sea
43.	Geologic Features
44.	Economic Aspects
45.	Multiple-Choice Question
46.	Predefined Questions
47.	Gaming Quiz
48.	Location
49.	Country
50.	Screen
51.	Points
52.	Rounds
53.	Leaderboard
54.	Top Scorer
55.	Month
56.	Dashboard
57.	Chat
58.	Active Users
59.	Text Messages
60.	Account



## General Classification

Candidate classes are categorized based on the seven general classification. The analysis classes manifest themselves in one of the following ways:

1. External entities
2. Things
3. Occurrences or events
4. Roles
5. Organizational units
6. Places
7. Structures

A candidate class is selected for special classification if it fulfills three or more characteristics.

Serial No	Noun	General Classification
1.	Website	2, 7
2.	Application	2,7
3.	User	4,5,7
4.	Registered User	4,5,7
5.	Account	2,7
6.	Admin	4,5,7
7.	Information	2
8.	Profile	2
9.	Registration	2
10.	Option	2,7
11.	Password	2,7
12.	OTP	2,7

13.	Email	1
14.	General facts	2,7
15.	Population	2,7
16.	Capital	2,7
17.	Official Language	2,7
18.	History	2,7
19.	Culture	2,7
20.	Literature	2,7
21.	Music	2,7
22.	Sports	2,7
23.	Football	2,7
24.	Cricket	2,7
25.	Nations	2,7
26.	Map	2,7
27.	Achievements	2,7
28.	Players	4,5,7
29.	Forms of Government	7
30.	Communism	7
31.	Monarchy	7
32.	Travel	7
33.	Tourist Destinations	6
34.	Pictures	2
35.	Unions	7
36.	SAARC	7

37.	ASEAN	7
38.	GCC	7
39.	Nordic countries	7
40.	Baltic countries	7
41.	Ocean	2,6,7
42.	Sea	2,6,7
43.	Geologic Features	2
44.	Economic Aspects	2
45.	Multiple-Choice Question	2,7,3
46.	Predefined Questions	2
47.	Gaming Quiz	2,3,7
48.	Location	6
49.	Country	2,6,7
50.	Screen	2
51.	Points	2
52.	Rounds	2
53.	Leaderboard	2
54.	Top Scorer	4,5,7
55.	Month	2
56.	Dashboard	2
57.	Chat	2,3,7
58.	Active Users	4,5,7
59.	Text Messages	2

60.	Account	2,7
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### Potential Classes after general classification

- 61. User
- 62. Registered User
- 63. Admin
- 64. Email
- 65. Ocean
- 66. Sea
- 67. Multiple Choice Question
- 68. Gaming Quiz
- 69. Country
- 70. Top Scorers
- 71. Chat
- 72. Active Users

### Selection Criteria

The candidate classes are then selected as classes by six Selection Criteria. A candidate class generally becomes a class when it fulfills around three characteristics.

- 1. Retain information
- 2. Needed services
- 3. Multiple attributes
- 4. Common attributes
- 5. Common operations
- 6. Essential requirements

Potential general classified nouns to become a class after selection criteria :

Serial No	Noun	Selection Criteria
1.	User	1,2,3,4,5
2.	Registered User	1,2,3,4,5

3.	Admin	1,2,3,4,5
4.	Email	6
5.	Ocean	1,2,3,4,5
6.	Sea	1,2,3,4,5
7.	Multiple Choice Question	1,2,3,4,5
8.	Gaming Quiz	1,2,3,4,5
9.	Country	1,2,3,4,5
10.	Top Scorers	1,2,3,4,5
11.	Chat	1,2,3,4,5
12.	Active Users	1,2,3,4,5

### **Selected Classes**

1. User
2. Registered User
3. Admin
4. Email
5. Ocean
6. Sea
7. Multiple Choice Question
8. Gaming Quiz
9. Country
10. Top Scorers
11. Chat
12. Active Users

## List of objects

Class: User	
Attributes	Methods
	<ul style="list-style-type: none"><li>+ view_physiographic_geologic_feature()</li><li>+ view_economic_aspect()</li><li>+ view_general_facts()</li><li>+ view_history_info()</li><li>+ view_culture_info()</li><li>+ view_sportsinfo()</li><li>+ show_forms_of_government()</li><li>+ view_travel_place()</li><li>+ view_unions()</li></ul>

Class: Registered User	
Attributes	Methods
<ul style="list-style-type: none"><li>- Username</li><li>- Country</li><li>- email_id</li><li>- Password</li><li>- active_status</li></ul>	<ul style="list-style-type: none"><li>+ view_physiographic_geologic_feature()</li><li>+ view_economic_aspect()</li><li>+ view_general_facts()</li><li>+ view_history_info()</li><li>+ view_culture_info()</li><li>+ view_sportsinfo()</li><li>+ show_forms_of_government()</li><li>+ view_travel_place()</li><li>+ view_unions()</li><li>+ sign_up()</li><li>+ login()</li><li>+ reset_password()</li><li>+ chat()</li><li>+ play_game()</li><li>+ play_mcq()</li></ul>

Class: Top Scorer	
Attributes	Methods
<ul style="list-style-type: none"><li>- Username</li><li>- Country</li></ul>	<ul style="list-style-type: none"><li>+ sign_up()</li><li>+ login()</li></ul>

<ul style="list-style-type: none"> <li>- email_id</li> <li>- password</li> </ul>	<ul style="list-style-type: none"> <li>+ view_information()</li> <li>+ reset_password()</li> <li>+ play_quiz()</li> <li>+ send_request()</li> <li>+ accept_or_deny_request()</li> <li>+ set_level()</li> </ul>
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Class: Active users Account	
Attributes	Methods
<ul style="list-style-type: none"> <li>- Username</li> <li>- Country</li> <li>- email_id</li> <li>- Password</li> <li>- active_status</li> </ul>	<ul style="list-style-type: none"> <li>+ sign_up()</li> <li>+ login()</li> <li>+ view_information()</li> <li>+ reset_password()</li> </ul>

Class: Admin	
Attributes	Methods
<ul style="list-style-type: none"> <li>- Username</li> <li>- Country</li> <li>- email_id</li> <li>- password</li> </ul>	<ul style="list-style-type: none"> <li>+ login()</li> <li>+ view_information()</li> <li>+ reset_password()</li> <li>+ change_information()</li> <li>+ set_question()</li> </ul>

Class: Email	
Attributes	Methods
<ul style="list-style-type: none"> <li>- OTP</li> </ul>	<ul style="list-style-type: none"> <li>+ generate_OTP()</li> <li>+ send_OTP()</li> </ul>

Class: chat	
Attributes	Methods

- list_of_registered_users	+ see_active_user() + +make_active_user_list() + send_request() + accept_or_deny_request() + do_chat()
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Class: Ocean	
Attributes	Methods
- name	+ show_physiographic_geologic_feature() + show_economic_aspect()

Class: Sea	
Attributes	Methods
- name	+ show_physiographic_geologic_feature() + show_economic_aspect()

Class: Country	
Attributes	Methods
- name	+ show_general_facts() + show_history() + show_culture() + show_sports() + show_forms_of_government() + show_travel_place() + show_unions()

Class: Multiple Choice Question	
Attributes	Methods
- Level	+ show_question()



- score	+ update_score()
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Class name: Gaming Quiz	
Attributes	Methods
<ul style="list-style-type: none"> <li>- option</li> <li>- unmarked_map</li> <li>- leaderboard</li> <li>- Level</li> <li>- XP_points</li> </ul>	<ul style="list-style-type: none"> <li>+ show_unmarked_map()</li> <li>+ show_question()</li> <li>+ update_XP_points()</li> <li>+ update_leaderboard()</li> <li>+ update_level_of_player()</li> </ul>

## Analysis

From the list of objects we see User, Top Scorer, Active Users Account objects have the same methods.

So, we merge User, Top Scorer, Active Users Account and make User class.

Also we use User as a super class of Registered User and Registered User as a superclass of Admin to introduce inheritance and for better understanding and design.

So Admin extends Registered User and Registered User extends User class.

### User:

**Method:** view\_physiographic\_geologic\_feature(), view\_economic\_aspect(), view\_general\_facts(), view\_history\_info(), view\_culture\_info(), view\_sports)info(), show\_forms\_of\_government(), view\_travel\_place(), view\_unions()

### Registered user:

**Attribute:** username, country, email\_id, password

**Method:** sign\_up(), login(), reset\_password(), play\_quiz(), set\_level()

send\_request(), accept\_or\_deny\_request()

**Admin:**

**Method:** change\_information(), set\_question()

From the list of objects we also see Ocean, Sea objects have the same methods. So, we merge Ocean, Sea and make Ocean & Sea class

like:

**Ocean & Sea:**

**Attribute: name**

**Method:** show\_physiographic\_geologic\_feature(), show\_economic\_aspect()

### **Final List of Class**

1. User
2. Registered User
3. Admin
4. Email
5. Chat
6. Ocean & Sea
7. Country
8. Multiple Choice Question
9. Gaming Quiz