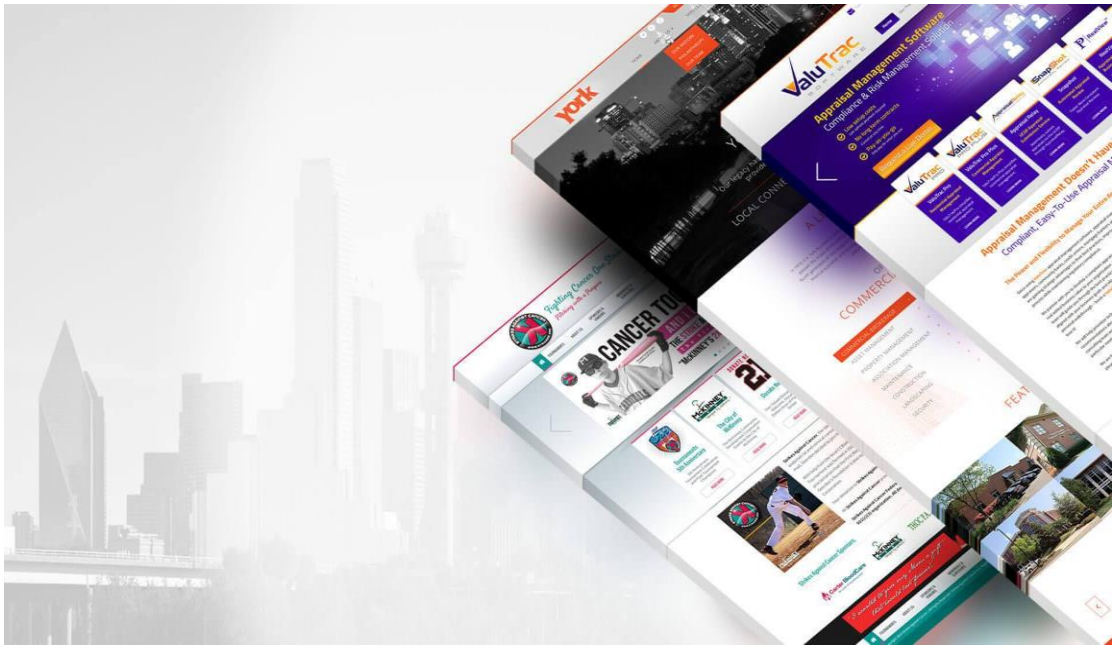

Xeon GROUP

PROCESS REPORT OF QUIZ WEB

Group Members:

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YIN RUI KANG

LIN MA

YUZE LI

Introduction

Nowadays, with the development of the internet, traditional education is influencing by internet and online studying become more and more popular. The quiz website is a fashion way to use in the class or after school study. For instance, the education quiz website—Kahoot, it provides a probability for users to easily get access more education resources and interact with others. In this project we expected to build a website that have similar function but provide more service than Kahoot. The purpose of our project is to solve the disadvantages of Kahoot and allow any student from all over the world can participate in the quizzes by clicking the shared link. Therefore, this website can provide a global learning exchange to every student.

Requirements and Functions

This part includes some of the functional and requirements of this project, it is provided that the detailed description of the system and function.

External Interface Requirement

1.User interface

When the user open the website's home page, there is bright colors, clear and simple functions make it easy for users to find the modules they want to enter. And the user can decide on the start page to play the game or exit the game. Before the user begin the game, there will show the user guides with video let user understand the game quickly. When the user presses the start button, the start page automatically and then answer the questions one by one until complete all questions. And then submit it that the mark will come.

2. Hardware interface

The website can access by computer, laptop and mobile phone, but it does not need to run on particular models, therefore, the web does not need any special hardware interfaces. The web can work with internet or the user can download the question bank offline play.

3. Software interface

The quiz game communicates with the internet application in order to do the exchange data through database with the question bank.

The communication between the website and database consists of only reading operations, and Read and modify execute only by the website.

There have two main functions in the quiz game, the first function is to assist all players to make a connection to the database. Secondly, the server does exchange the action data for both sides when the game in progress.

Functional requirements

User stories

As a user, I want to log in my account in home page that I can see my process and result.

As a user, I want to select my level and interesting knowledge to do the quiz. If I finish current level, I can go to next level.

As a user, I want to search for other players (high level or the same level) to make a study competition with them, in order to let the study more interesting.

In order to win the quiz game, I need to answer all questions correctly, if not I hope to do it again or to review the knowledge about that wrong answer question.

As a user, when I finish the quiz and some answers are wrong, I want the website system can give me some tips on the wrong answer that I can catch the knowledge.

As a user, I want the website system can save my quiz every time that I can review the study.

Prototype Design

The main purpose of this website is to allow more people to participate in the testing and learning of knowledge. The website enhances the user's enthusiasm by ranking, and then rewards the user (in preparation). Users can discover and learn a lot of unpopular knowledge or common sense when they play the games on this website.

Ways of profit: The website is profitable through advertising and sponsorship (profit and non-profit organizations).

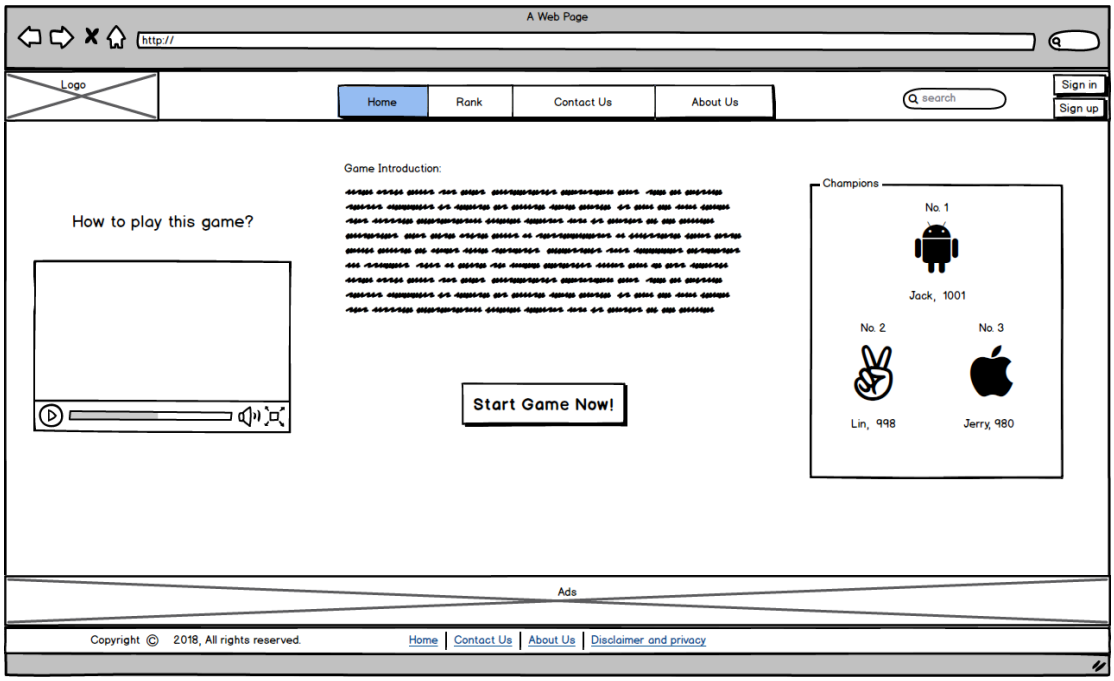
Culture: A diverse cultural background will appear in the question, which can detect the user's knowledge reserve.

Experience: Users can answer questions here, also can discuss and submit questions with others (user communicating zone will be added in the future).

The mockup design of this website

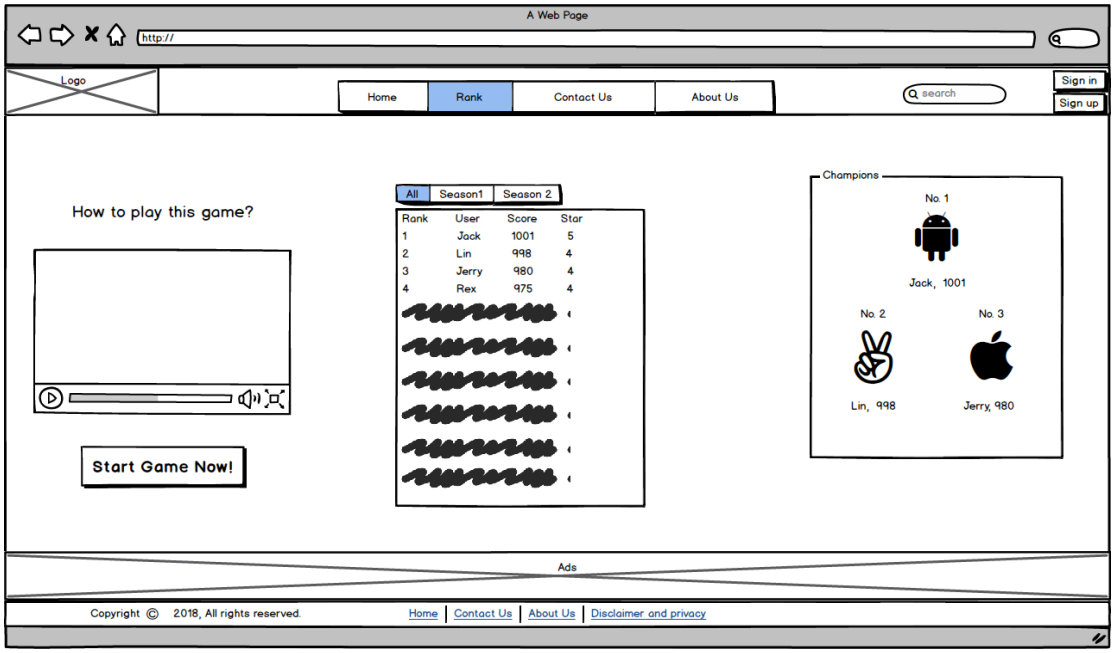
Home page

This is also a default page when someone who open this website. In home page, there is a navigation bar in the top. The navigation bar includes website logo, navigation of this site, search engine and Log in/ register buttons. In the middle of this page, there were three parts, a video introduction, a text introduction and the rank champions No.1 to 3. At the bottom show advertisement and footer bar.



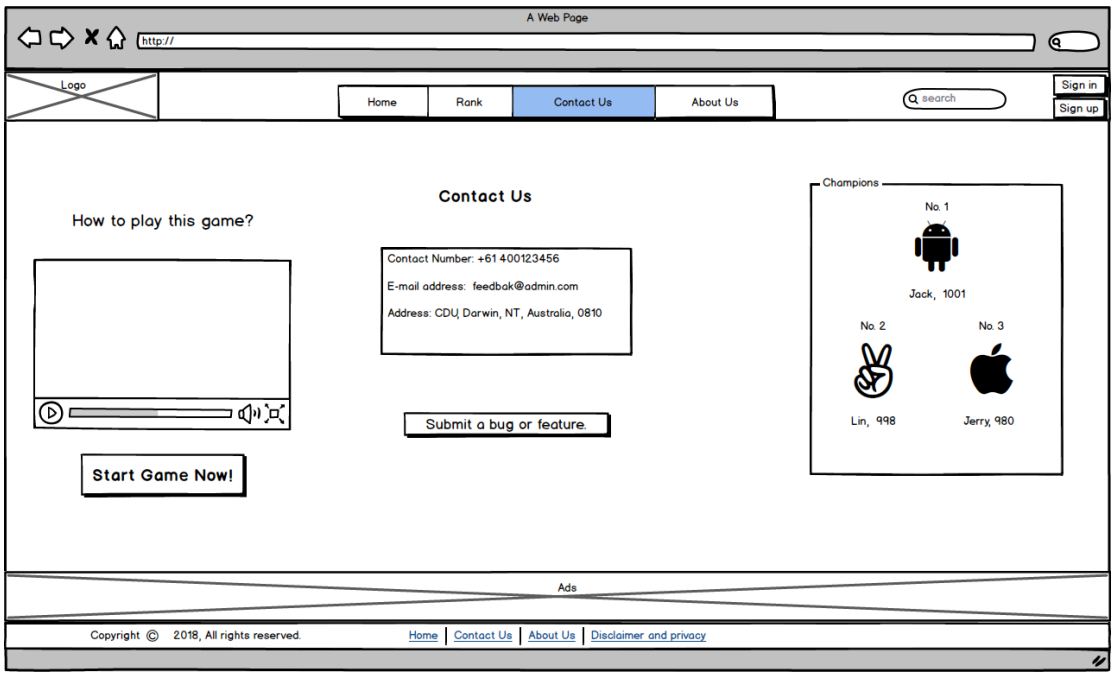
Rank page

In the middle, show the rank list. This list includes the number of rank, user's name, user's score, user's star and different game seasons.



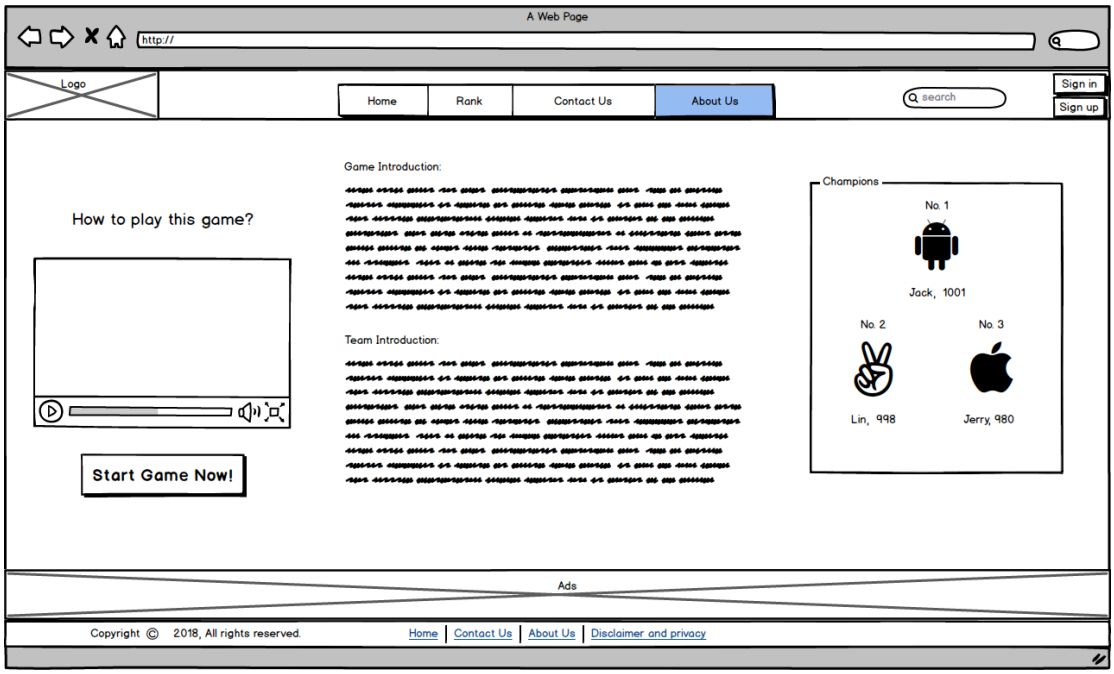
Contact Us page

Contact page have two features. Firstly, show the contact details of our website. Then, user can submit bug and feedback to us.



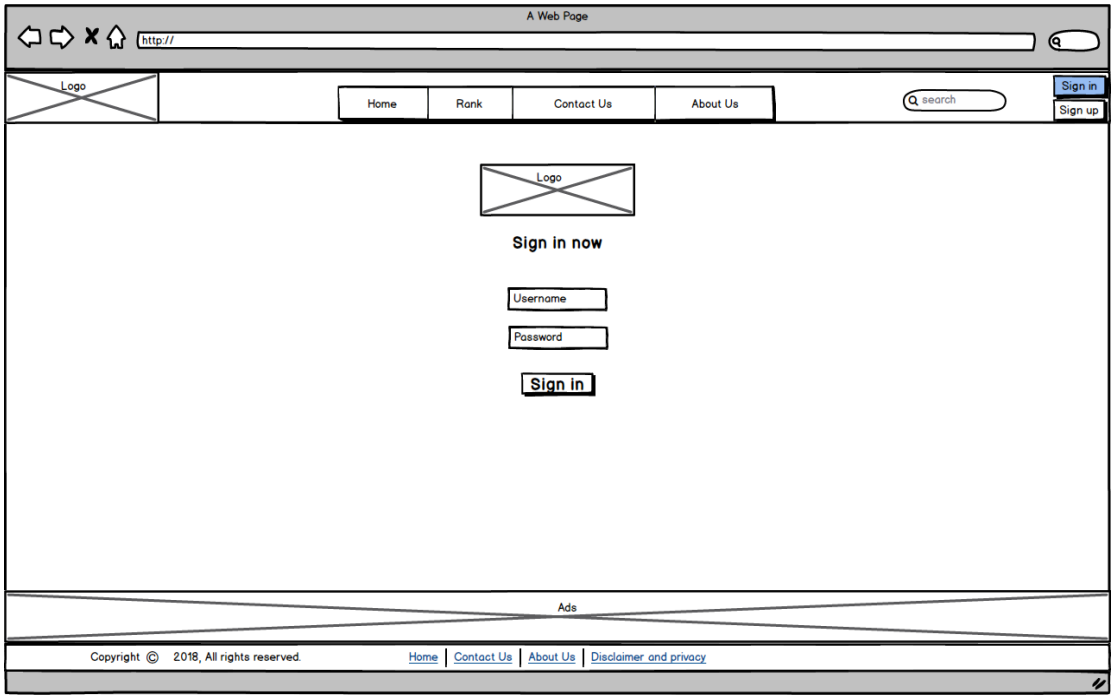
About Us page

In this page will show the details of our game and team members.



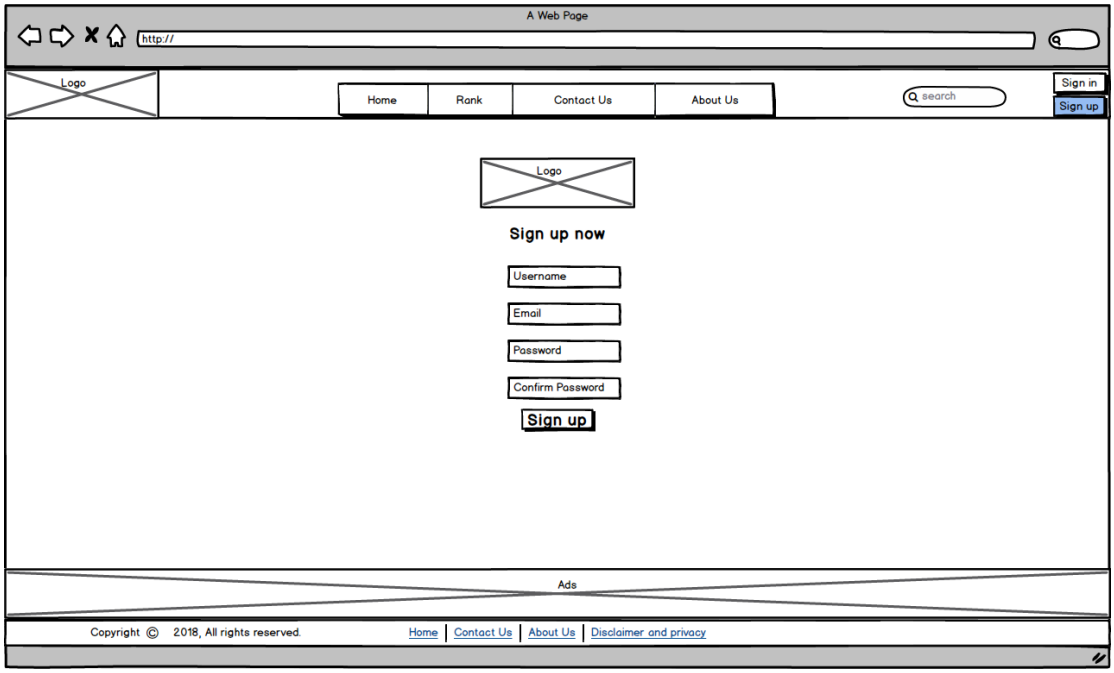
Login page

Simple login page. In the future user can user their social media account to log in this site.



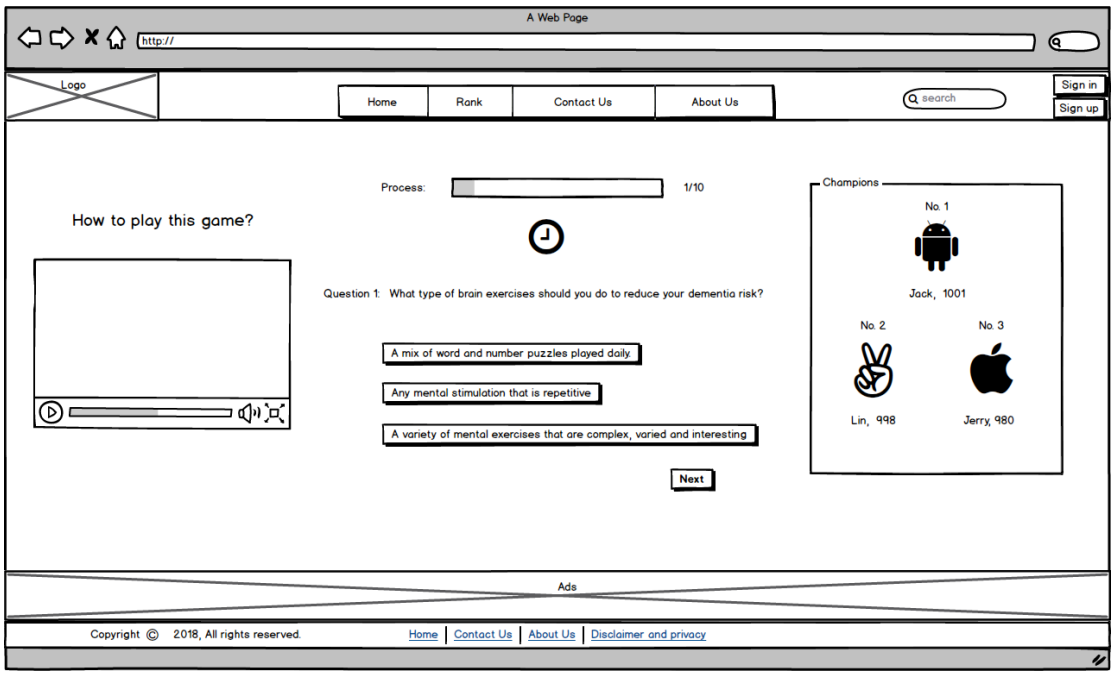
Register page

Basic and simple register page. User can easily get their account.



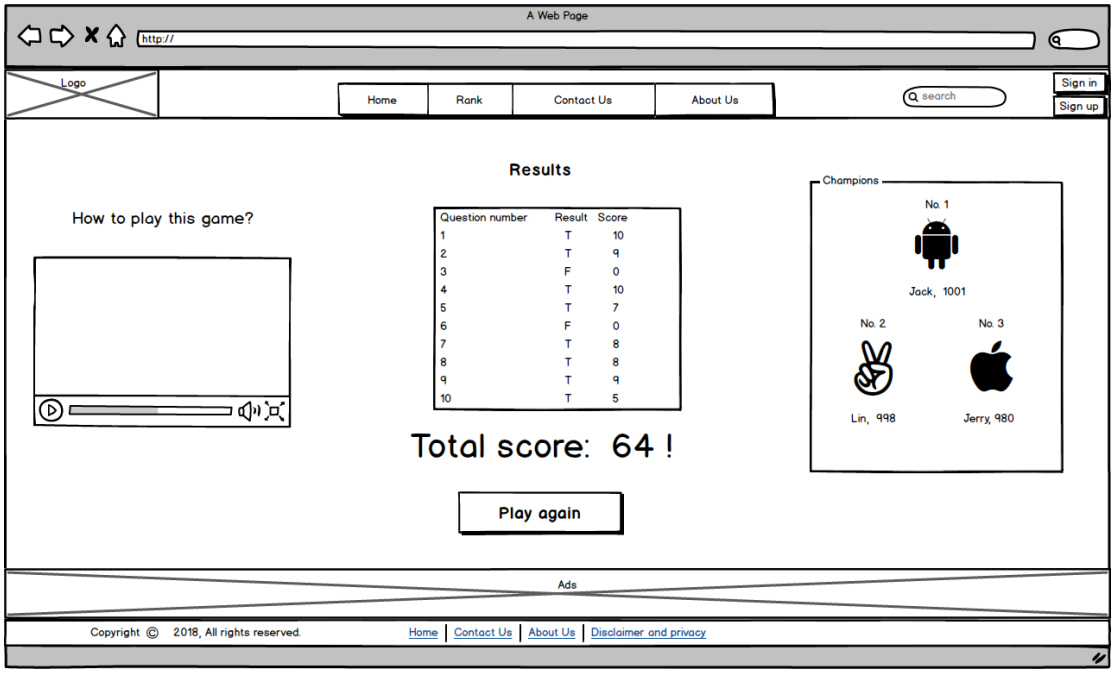
Game page

Game page gives a process bar, which can show the current process of a game. Also show the time below process bar. After, there is the question and question's options. When user type one answer and push 'Next' button or when this question overtime, the process will go to next question until question number 10.



Results page

This page will show the game score, questions have different score which based on the finish time of this question. Then show the total score of this game. In the future, we will add ‘share’ function to allow user sharing the score to social media.



Database Desgin

1. Role

Name	Data Type	PK	FK	Comment
RoleId	INT	Y		Id
Role	NVARCHAR(20)			admin, auditor, respondent

2. User

Name	Data Type	PK	FK	Comment
UserId	INT	Y		Id
UserName	NVARCHAR(20)			
NickName	NVARCHAR(20)			Unique
UserRole	NVARCHAR(20)			
PassWord	NVARCHAR(30)			
CreateDate	DATETIME			
Email	NVARCHAR(20)			
Phone	NVARCHAR(20)			
Sex	INT			0:male,1:female
Birth	DATATIME			
LastTimeLogOn	DATATIME			
Credits	FLOAT			Game Points

3. Question

Name	Data Type	PK	FK	Comment
QuestionId	INT	Y		Id
Question	NVARCHAR(256)			Content of question
CreatorId	INT		User_id	
Answer	NVARCHAR(20)			Right answer

4. Options

Name	Data Type	PK	FK	Comment
QuestionId	INT	Y	QuestionId	Id
OptionId	INT			0:A,1:B,2:C,3:D
OptionContent	NVARCHAR(256)			Question options

5. Quiz

Name	Data Type	PK	FK	Comment
QuizId	INT	Y		Id
QuizName	NVARCHAR(20)			
CreatorId	INT		User_id	
CreateDate	DATETIME			
Duration	INT			

6. Question_Quiz (in order to solve many to many problem)

Name	Data Type	PK	FK	Comment
QuizId	INT	Y	Quiz_Id	Id
QuestionId	INT		Question_Id	

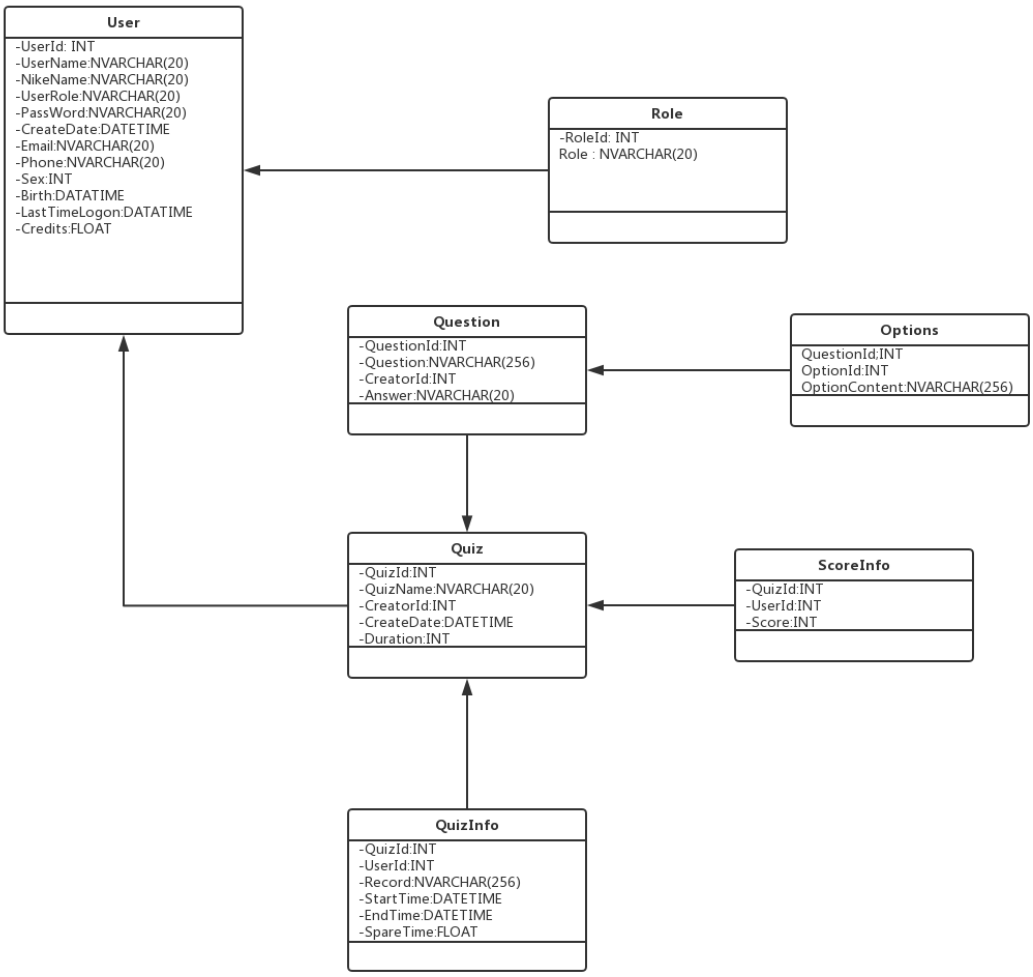
7. QuizInfo

Name	Data Type	PK	FK	Comment
QuizId	INT	Y	Quiz_Id	Id
UserId	INT		User_id	
Record	NVARCHAR(256)			
StartTime	DATETIME			
EndTime	DATETIME			
SpareTime	FLOAT			

8. ScoreInfo

Name	Data Type	PK	FK	Comment
QuizId	INT	Y	Quiz_Id	Id
UserId	INT		User_id	
Score	INT			

UML Diagram



Front-end

Design module

MVC API design module is used in this project. The front-end will communicate with the database by Jason, which can get the info form database by decrypt Jason string. This can benefit the multi-platform development.

Design pattern

Singleton: Allocate memory space for the class when App start running to increase the speed, rather than Allocate memory space when the specific class will be used to

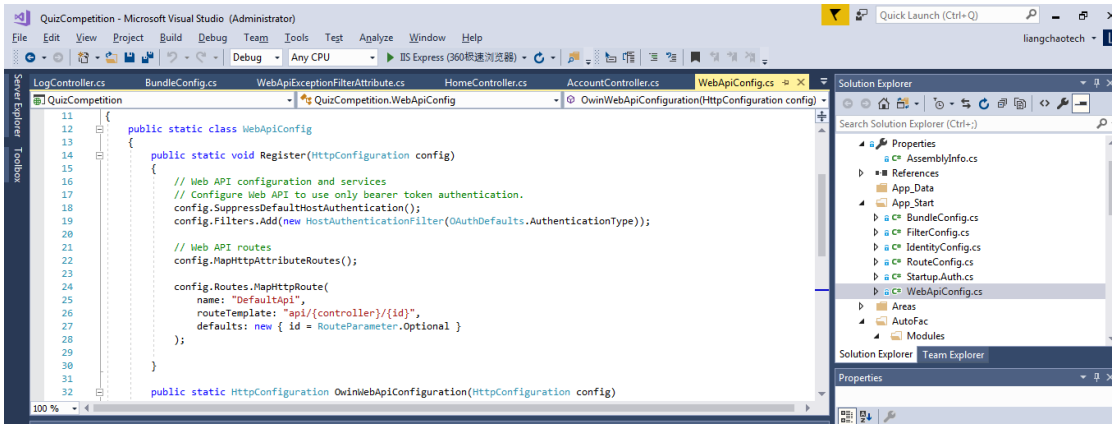
save the space. As the software is strong enough, and user is more careful about the user experience.

Factory Method

Factory Method is a popular design pattern for further updating and iterating

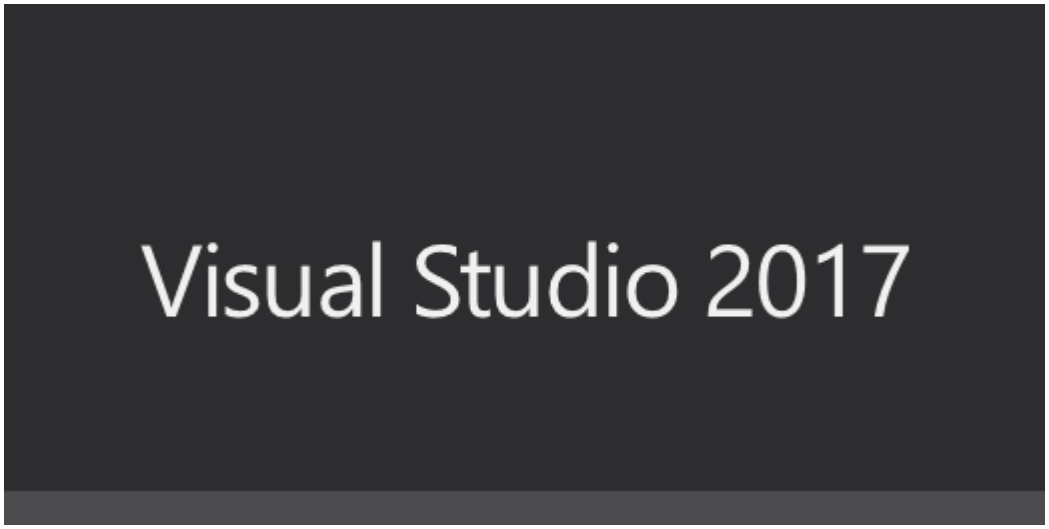
Development Frameworks

Our project is a WebAPI based project. The reason why we chosen WebAPI project is that APIs can be used in different platform and WebAPI project also support features of MVC architecture.



The Introduction of Application Tools and Frameworks

1. Visual studio (IDE)

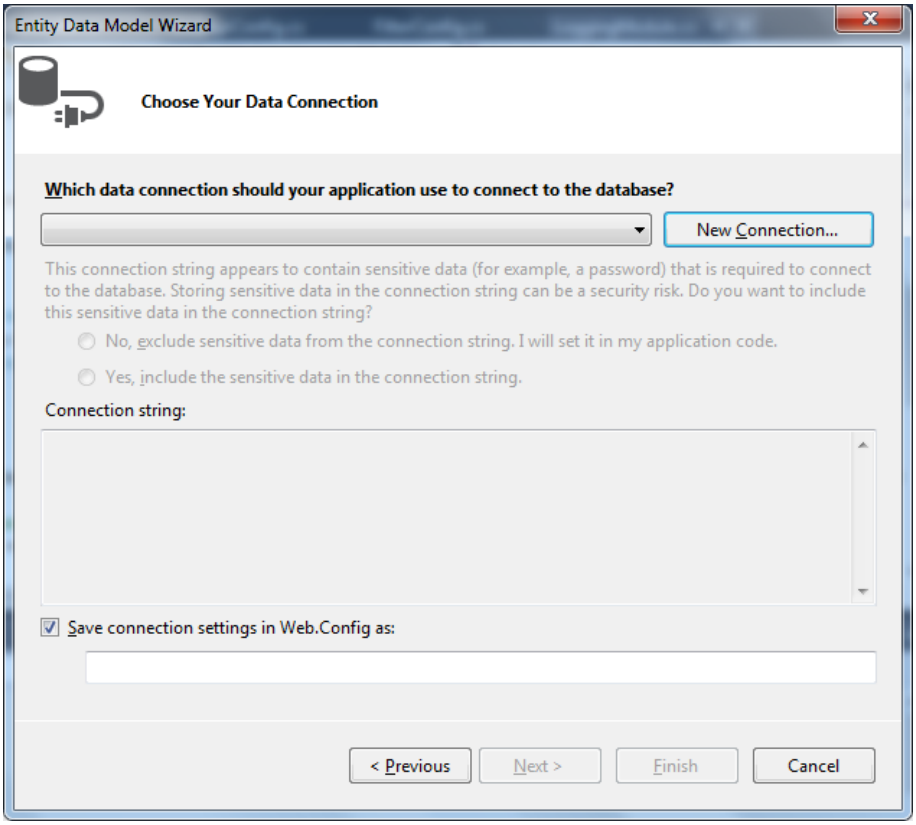


VS is a basic and complete development toolset, which includes most of the tools needed throughout the software life cycle, such as UML tools, code management tools, integrated development environment (IDE), and so on. The written object code applies to all platforms supported by Microsoft, including Microsoft Windows, Windows Mobile, Windows CE,.NET Framework, .NET Compact Framework, Microsoft Silverlight and Windows Phone.

Visual Studio is currently the most popular integrated development environment for Windows platform applications. The latest version is Visual Studio 2017, based on.NET Framework 4.5.2.

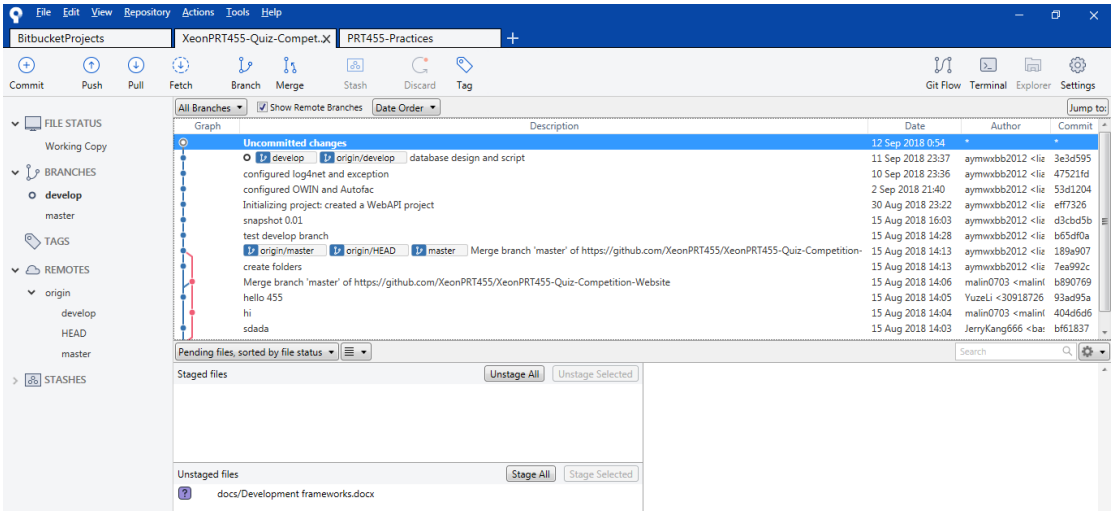
2. SQL Server (database)

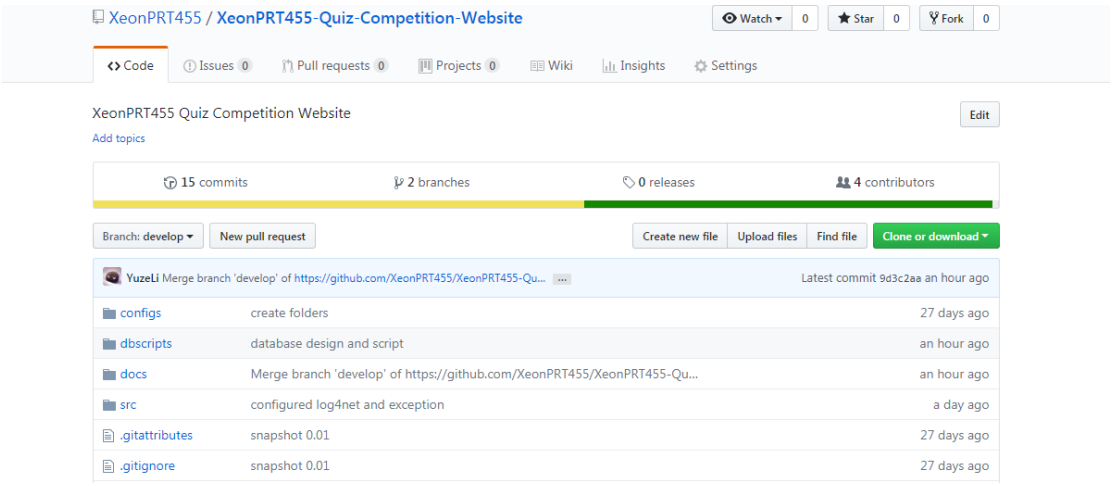
3. Entity Framework (ORM framework)

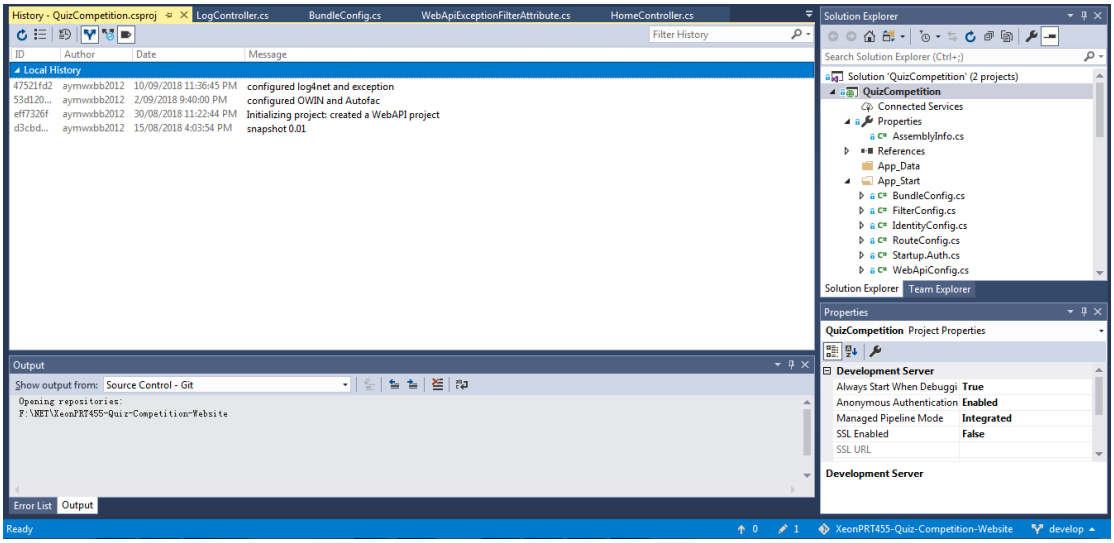


ADO.NET Entity Framework is Microsoft's O/R Mapping solution based on ADO.NET.

4. Source tree and Github (Change management)







Used in Version control. The main function is to store source code and revision records into a service warehouse. Users can connect to this repository through a client program that allows you to download, view, edit, patch, and submit changes to source code files.

5. OWIN

Traditional asp. net websites can only be deployed under iis, but the disadvantage is that web applications and servers (i.e. iis) are coupled, which leads to a simple request that goes through a series of iis-built modules and handlers and other mechanisms (asp. net request pipelines) before it finally reaches the business code. By using OWIN, our project can be more flexible and get rid of some mechanism of IIS.

6. Autofac

```
Log4net.config  LogController.cs  WebApiConfig.cs  FilterConfig.cs  LoggingModule.cs  ContainerBuilerCommon.cs
QuizCompetition  QuizCompetition.AutoFac.ContainerBuilerCommon  GetWebApiContainer()
 4   using QuizCompetition.AutoFac.Modules;
 5
 6   namespace QuizCompetition.AutoFac
 7   {
 8       public class ContainerBuilerCommon
 9       {
10           public static IContainer GetWebApiContainer()
11           {
12               var builder = new ContainerBuilder();
13               builder.RegisterApiControllers(Assembly.GetExecutingAssembly());
14
15               builder.RegisterModule<LoggingModule>();
16               // builder.RegisterType<Example>().As<IExample>();
17
18               // builder.RegisterApiControllers(Assembly.GetExecutingAssembly());
19               //builder.RegisterAssemblyTypes(Assembly.Load(nameof(DemoLibrary)))
20               // .Where(t => t.Namespace.Contains("Utilities"))
21               // .As(t => t.GetInterfaces().FirstOrDefault(i => i.Name == "I" + t.Name));
22
23               return builder.Build();
24           }
25       }
```

Autofac is an IOC framework. Compared to other IOC frameworks such as Spring.NET, Unity, Castle and so on, it is very lightweight and very high performance.

7. Log4net

```
Log4net.config  LogController.cs  AccountController.cs  WebApiConfig.cs  FilterConfig.cs  LoggingModule.cs
 1  <?xml version="1.0" encoding="utf-8"?>
 2  <configuration>
 3  <log4net>
 4    <!--record all-->
 5    <appender name="AllLogFileAppender" type="log4net.Appender.RollingFileAppender">
 6      <!--Gets or sets the path to the file that logging will be written to., -->
 7      <file value="log/all/log_" />
 8      <!--Gets or sets a value indicating whether to always log to the same file.-->
 9      <staticLogFileName value="false" />
10      <!--Gets or sets a flag that indicates whether the file should be appended to or overwritten.-->
11      <appendToFile value="true" />
12      <!--configure Size、Date-->
13      <rollingStyle value="Date" />
14      <!--Gets or sets the maximum number of backup files that are kept before the oldest is erased.-->
15      <maxSizeRollBackups value="10" />
16      <!--MB,KBGets or sets the maximum size that the output file is allowed to reach before being rolled over to backup files.-
17      <maximumFileSize value="5MB" />
18      <!--Gets or sets the date pattern to be used for generating file names when rolling over on date.-->
19      <datePattern value="yyyy-MM-dd'.log'"/>
20      <!--pattern-->
21      <layout type="log4net.Layout.PatternLayout">
22        <conversionPattern value="%date [%thread] %-5level %logger [%property{NDC}] - %message%newline" />
23      </layout>
```

Log4net logging is very powerful. It can divide logs into different levels and output them to different media in different formats.