

## Android Application for Testing English Proficiency

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### ABSTRACT

English, the official language of many states and international organizations, serves as the standard for instruction globally. English proficiency is another prerequisite from some employers for employment in the working world. To determine a person's level of English proficiency, the TOEIC exam is employed. Several companies use a candidate's TOEIC score as a proxy for their level of English ability. A series of assessments, including listening and reading tests, make up the TOEIC. It is imperative for someone to conduct independent study in order to improve their TOEIC score given the comparatively expensive cost of the TOEIC course and exam. The layout of this TOEIC test simulation application makes it simple to practice whenever you want, wherever because it can be utilized offline on a smartphone. The TOEIC test simulation application, which contains four main menus: tips and tricks, TOEIC simulation, solutions, and about, was made using the Eclipse editor and Java programming. The questions under the tips and tricks section can be answered in a snap using easy methods. The right or wrong answers to the exam questions that are shown in the simulation menu can be found by selecting the solution option.

## 1. INTRODUCTION

Today, learning English has become not only mandatory but also essential for everyone. English is now utilized more frequently both in academic settings and professional settings. Given that Indonesians do not speak English as their first language, learning the language requires at least some effort. Several employers require English proficiency of potential employees in order to hire them, even in the workplace. Tutoring or classes, as well as a number of exams to gauge English competence, including the TOEIC, can all be used to improve one's English proficiency.

An English proficiency test that can be used in nations where English is not the primary language is called the Test of English for International Communication (TOEIC). A certificate proving one's participation in the TOEIC exam is given to test-takers. The certificate includes a score that serves as a gauge of how well a person's TOEIC-based English proficiency. To test a person's level of English proficiency for everyday communication and the workplace, the TOEIC is utilized in commercial and professional settings.

The TOEIC tests the basic knowledge of English used in the workplace as well as the skills of listening and reading. Many times, test takers who fail the TOEIC do so because they are not proficient in the subject matter. There are a variety of methods, like taking classes and self-study, to get the target score. Despite this, there were issues with enrolling in classes, and the TOEIC exam cost a lot of money.

A method of education other than taking courses is reading books. The Master of TOEIC, "Smart TOEIC: Getting High Scores in TOEIC Easy," and other TOEIC simulation books have all been promoted. However, using books for self-study is seen to be less beneficial due to a number of factors, including the need for prior comprehension, being tedious and monotonous, and so on. To help different groups study the TOEIC independently or self-taught, a mobile learning application is given in the form of a simulation to address issues like these.

Mobile learning is a method of education that makes use of the advancements in cellular technology and mobile devices (such as those made by HP), which are utilized as learning tools and come with multimedia content such text, graphics, audio, and video. By making it more accessible through mobile technology, it takes on the qualities of an exciting learning resource and an alternate learning paradigm that is independent of space and time. When mobile learning is available, learning TOEIC is simpler in any situation because there is no need to bring a variety of books or other TOEIC resources.

The Java programming language and Eclipse editor are used in the TOEIC mobile learning application, which was created to address Google Play Store shortcomings. The program is free and can be used offline. The simulation and solution menus are the two main sections of this application. While the solution menu comprises TOEIC questions and their discussion, the simulation has TOEIC exam questions and quickly provides results.

According Vserv, the top smart data platform for mobile marketing and commerce, to study on smartphone users in Indonesia, only 17% of users are likely to use their devices for learning purposes, and more than 50% are likely to use them for social networking, games, and data lust. Android smartphone users are the target audience for the TOEIC mobile learning application's design. With the help of this app, smartphone users should be able to use their devices more effectively for learning.

### **Mobile Learning Technology**

A Silicon Valley startup by the name of Android Inc. first created the mobile operating system (OS) known as Android. The Open Handset Alliance (OHA), a collaboration started by Google in 2007, gives Android an advantage in offering comprehensive software, including the primary OS, middleware, and specific mobile applications. According to <sup>[12]</sup>, Android is a device that utilizes a mobile phone operating system based on Linux

### **Java Application**

Eclipse is an IDE (Integrated Development Environment) for developing software and can be run on all platforms (platform-independent) <sup>[14]</sup>.

Software called JDK (Java Development Kit) is used to translate Java code into bytecode that the JRE can understand and use (Java Runtime Environment). The primary element responsible for running Java-based applications is JRE.

### **MySQL**

A local web server can be used to access XAMPP, an intuitive web server that can show dynamic web pages (localhost). The Apache HTTP Server, MySQL, and a language translator created in the PHP and Perl programming languages are just a few of the applications that make up XAMPP. Because XAMPP includes Apache as a local HTTP server, developers can create dynamic websites using PHP offline thanks to the GNU General Public License and free availability of this application software.

The first database that is supported by internet scripting languages is MySQL (PHP and Perl). The optimal software pair for developing web applications is thought to be MySQL and PHP. Web-based applications are typically created using the PHP scripting language, while MySQL is more frequently utilized<sup>[8]</sup>.

### **TOEIC**

The goal of this TOEIC application's design is to create a TOEIC simulation on an Android-based smartphone to aid in TOEIC study while on the go, promote the use of smartphones as learning tools, and incorporate summaries of different TOEIC question types from various books into an application that can be used in a variety of contexts. anywhere

For each session, the TOEIC score uses a range from 5 to 495. (listening comprehension and reading comprehension). The range of TOEIC scores is 100 to 990 overall. Thus, the lowest value that may be acquired is 10 and the highest value is 990.

## 2. METHOD

The researchers used waterfall model method in building the Android Application for Testing English Proficiency. The researchers followed an orderly, sequential procedure for a number of the steps in this model. This model has the property that it needs to complete every stage before moving on to the next one.

The layout thus contains numerous steps, including the planning stage for figuring out the software requirements. This analysis stage explains the overall system image as well as the system's design stage, implementation stage, and maintenance stage. The order of these phases is as follows:

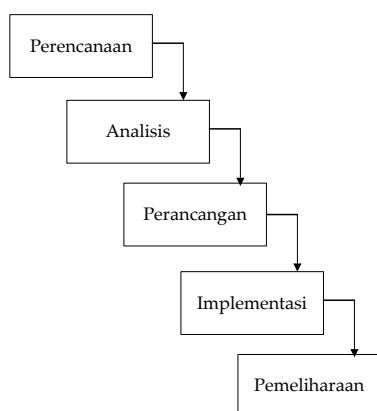


Figure 1. Waterfall Model

## 3. RESULT AND DISCUSSION

### TOEIC Score Calculation

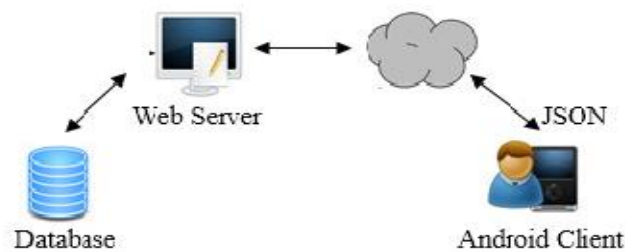
Table 1. Conversion of TOEIC Score  
(Resources: Global-Exam.com)

#jawaban benar	skor Listenin g	skor Readin g	#jawaban benar	skor Listenin g	skor Readin g	#jawaban benar	skor Listenin g	skor Readin g	#jawaban benar	skor Listenin g	skor Readin g
1	5	5	26	55	35	51	235	195	76	400	340
2	5	5	27	60	40	52	245	205	77	405	345
3	5	5	28	70	45	53	255	210	78	415	355
4	5	5	29	80	55	54	260	215	79	420	360
5	5	5	30	85	60	55	265	220	80	425	370
6	5	5	31	90	65	56	275	230	81	430	375
7	5	5	32	95	70	57	285	240	82	435	385
8	5	5	33	100	75	58	290	245	83	440	390
9	5	5	34	105	80	59	295	250	84	445	395
10	5	5	35	115	85	60	300	255	85	450	400

11	5	5	36	125	90	61	310	260	86	455	405
12	5	5	37	135	95	62	320	270	87	460	415
13	5	5	38	140	105	63	325	275	88	465	420
14	5	5	39	150	115	64	330	280	89	475	425
15	5	5	40	160	120	65	335	285	90	480	435
16	5	5	41	170	125	66	340	290	91	485	440
17	10	5	42	175	130	67	345	295	92	490	450
18	15	5	43	180	135	68	350	295	93	495	455
19	20	5	44	190	140	69	355	300	94	495	460
20	25	5	45	200	145	70	360	310	95	495	470
21	30	10	46	205	155	71	365	315	96	495	475
22	35	15	47	215	160	72	370	320	97	495	485
23	40	20	48	220	170	73	375	325	98	495	485
24	45	25	49	225	175	74	385	330	99	495	490
25	50	30	50	230	185	75	395	335	100	495	495

Table 1 shows that a minimum score of 60 points requires at least 27 correct responses. You will only receive 110 points if you are able to correctly answer less than one-third of the questions. A minimum of 75 correct responses are needed in order to receive a range of 390 points. Also, in order to earn 470 points and move up a level, you must receive at least 89 accurate answers. You will receive a score of 495 points once you have 93 right responses.

### Client - Server



**Figure 2.** Architecture Design

Figure 2 shows a user using an application that runs on the Android platform to conduct a test. Android smartphones will use the internet to send requests (get or posts) to the server. After that, the web server (PHP) will handle Android requests and run database queries. Data is transferred from the PC to the Android device using JSON (Javascript Object Notation) middleware.

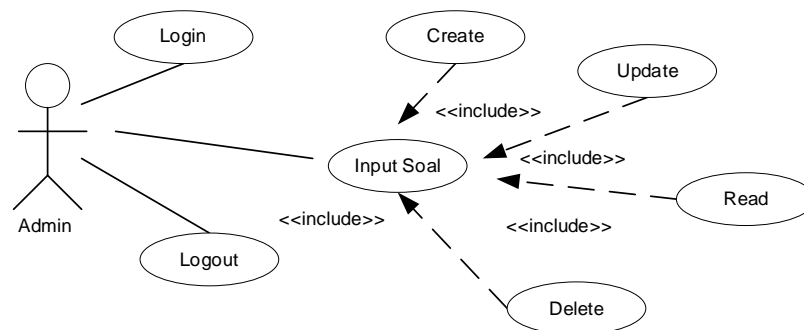
**Actors Identification**

**Table 2.** Actors Identification

Numb	Actor	Activities
1	User	<ul style="list-style-type: none"> <li>▪ Learn tricks and advice.</li> <li>▪ Conduct the TOEIC exam;</li> <li>▪ View the exam questions and enter the answers;</li> <li>▪ View the results;</li> <li>▪ Discussion.</li> </ul>
2	Admin	<ul style="list-style-type: none"> <li>▪ Managing System;</li> <li>▪ CRUD TOEIC inquiries.</li> </ul>

What tasks actors can perform is shown in table 2. Before taking the test, while taking the test, entering answers, seeing scores, and reading discussion on TOEIC questions, users read tips and techniques instructions. The admin also manages the TOEIC questions, which are made up of CRUD (create, read, update, and delete) and system management tasks.

**Use Case Diagram**



**Figure 3.** Use Case Diagram

As illustrated in figure 3, the user is able to choose from a menu that contains tips and tricks, the TOEIC test, solution, and about when the application is opened. The TOEIC test tips and tricks will be shown if the user chooses the tips and tricks menu. Simulations 1 and 2 will make an appearance if the user chooses the TOEIC simulation test menu.

**Activity Diagram**

Activity diagrams are made to display the actions that take place over the course of an operation. A rounded rectangle is used to represent each activity. When an activity is finished, processing for the subsequent activity is transmitted. Figure 4 depicts how users can take the TOEIC test, which comprises of two tests— Simulations 1 and 2—each of which consists of two different test kinds, Reading and Listening.

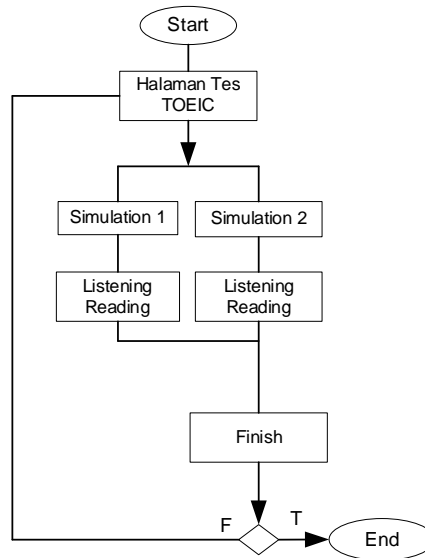


Figure 4. Activity Diagram

**Sequence Diagram**

The procedures that take place when a user accesses the applications and menu present in the TOEIC test simulation are described in the sequence diagram.

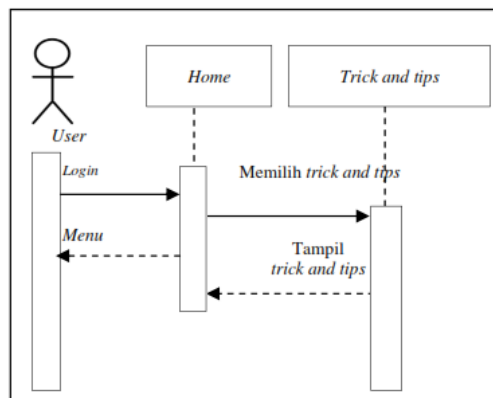


Figure 5. Sequence Diagram

Figure 5 illustrates that in order to access the application's menu, the user must first log in. For instance, instructions for administering a test using the TOEIC simulation application will surface when a user picks the tips and techniques menu. Moreover, the user can first return to the main menu before selecting another option.

### Randomization of the Questions and Answers

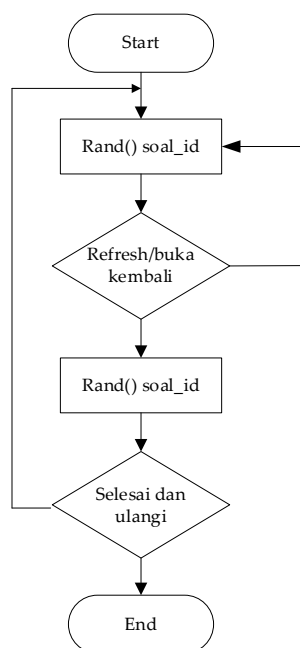


Figure 6. Flow of complex questions and answers

As the user views the simulation page, the questions in figure 6 start to be randomly generated; they then display random responses based on the question ID. The questions will be displayed at random when the simulation page is opened after being closed without finishing the test.

### Implementation

#### Interface

In order to determine whether the system can function as intended, interface implementation is done. The Android TOEIC simulation application is created on a client-server basis. The client is created in Java with an Android 4.4 (Kitkat) build target so that it may be installed on devices running Android 4.4 (Kitkat) and higher.



The PHP programming language and the Bootstrap framework were used in the server's design.

### Form Register/Login

The user must first register to be able to log in to this application, then, the menu options are visible on the home page when the user logs in.



The image shows a login form with the following elements:

- Title: Login
- Username field: A text input box with the placeholder text "Username".
- Password field: A text input box with the placeholder text "Password".
- Sign in button: A button with the text "Sign in".
- Close button: A red button with the text "Close" located below the form.

Figure 7. Login

### Home Page



Figure 8. Home

Home the main page's menu options, which include tips and tricks, simulation, solution, and about. The user will be directed to the following page any time on of the accessible options is chosen (clicked).

### Simulation Option

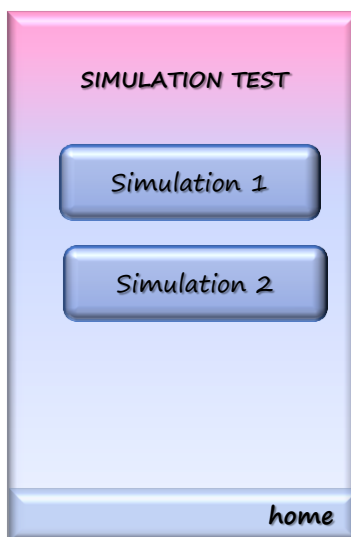


Figure 9. Simulation

The TOEIC simulation menu options, Simulation 1 and Simulation 2, are displayed in Figure 9. The listening and reading sections are subsequently divided within every simulation menu.

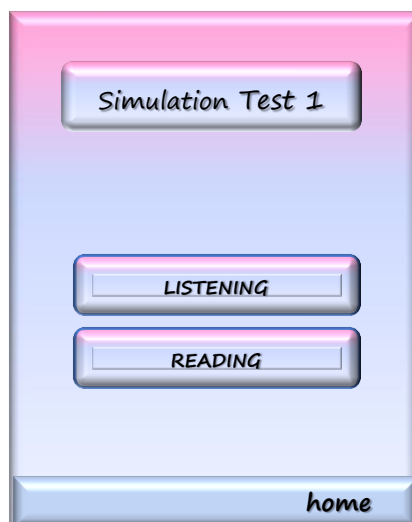


Figure 10. Simulation Test 1

An illustration of this is shown in Figure 10, where the user has the option to take the listening or reading test practice after selecting Simulation Test 1.

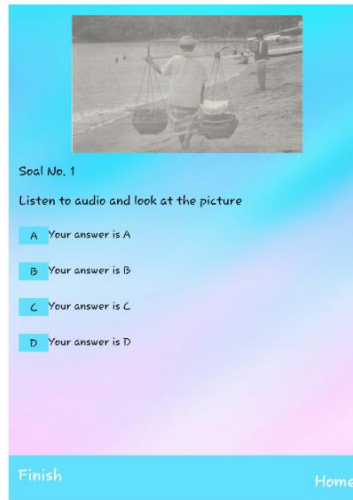


Figure 11. Listening Section

The user will be sent to take the test after choosing one of the menu selections, (example seen in figure 11). The tool will take up scoring when every user hits the finish button following complete answering the questions (figure 12).



Figure 12. Scoring

A score displaying the outcomes of the reading test will appear if the user selects the finish button while finishing the test.

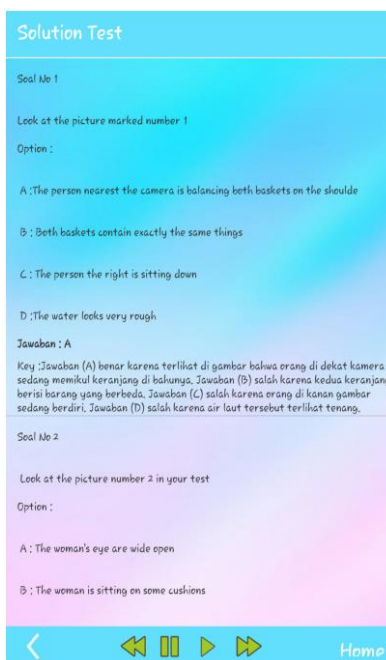


Figure 13. Solution

According to figure 13, when the user clicks the solution menu, some discussion with the solutions to the previously addressed issues will be shown.

#### 4. CONCLUSION

The design of an android-based TOEIC test simulation program promotes the usage of smartphones as learning material and provides an easier way for users to study for the TOEIC offline via smartphone devices without being constrained by time or place.

The goal of this application is to simplify test simulation for users by testing the questions provided in the form of reading and listening. This program also makes it easier for users to respond to questions and discuss following solution menu, and it also allows users to view their scores. The user will be more prepared to take the actual TOEIC after having this application to practice.

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