Facilitation for Undergraduate College Students to Learn Java Language Using E-Learning Model

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Abstract—The use of modern programming in Java has become widely used in the e-learning model to help the student learn in the right place and time. Students have difficulty learning Java and are time consuming without the benefit of understanding the material. This study presents how to build an electronic application to facilitate learning programming in modern languages. In order to confirm the effectiveness of the application, a questionnaire was developed on the need for an educational application that helps facilitate the process of learning Java and the need for diversity in the methods of educational methods. The study of this questionnaire appeared from the need for this educational electronic application. After applying the application in the same sample of students, they expressed their satisfaction and satisfaction with this application, and the impact of this use of this application in raising the educational level of the student in this subject The results show and reflect the good interest from students of this application.

Keywords—programming language, Java programming language, application, e-learning

1 Introduction

Given the advancement of data, incremental change, and the rapid development of learning, the world is facing a logical shift and major change [1]. E-learning is an educational strategy in transferring data to the student, and it uses today's correspondence components of computers, systems, and audio and video mixed media. As the world is experiencing a great scientific and technological revolution, it has had an impact on various aspects of life. Education has become required to search for new educational methods and models for development to meet many challenges at the global level. Many developed countries in the world, through higher education institutions, have taken the initiative to use development programs and integrate information technology into the educational process [2]. These programs have brought many benefits to higher education institutions, such as reducing financial costs and raising the efficiency of higher education. Therefore, it was necessary to take advantage of educational technological

developments and invest them in parallel with technological progress, so the benefit of these technologies in learning appeared from ready-made applications to support academic departments [3].

The accidental marriage between the fields of information technology and educational technology led to the emergence of new ways and methods to achieve a transformation in educational systems, and through the employment of some technical innovations such as the use of computers and its innovations, software and the international information network to improve the educational process and a necessity for institutions seeking quality [4]. It is a clear fact that some open and private colleges around the world need a large number of elements of progress and respect for advanced education, and this generates an impetus to activate computer applications to provide more comprehensive services and easier to deal with using modern programming languages [5, 6, 7, 8].

The e-learning system is a learning companion focused on individual interaction. This e-learning system gives our children an idea about computer programming which is java, tests, audio and video tutorial. In particular, the system will allow students to work at their own pace [9, 10, 11]. The system works on different devices through a browser like google chrome, safari, opera mini etc.

In the traditional teaching approach, the teaching methods are described as being teacher-oriented, and in the lecture style they are inflexible because the lessons are usually taught by the teacher who delivers lessons using a blackboard accompanied by verbal explanation or lecture, exercise, dictation and recitation. In this method, students with learning difficulties cannot deal with how the lesson is presented [9]. Above average students are disadvantaged because they do not challenge enough which means that not every student has the same pace of learning. Learn to easily deliver reading lessons, short lectures and videos. Self-directed learning can decide when, where and what to learn. Self-pacing allows students to move forward at their own pace. Privacy helps the shy and slow learner to learn [11, 12, 13, 14].

The objectives of this application make the problem easy to solve for memorization and understanding of programming concepts, methods, and codes in the programming languages of Java. Furthermore, the secondary aim is to save time and avoid problems that may students face when starting programming. the method will focus on the background of the research and other related work. This part expands on a survey of past investigations that have been advanced from past research on the job of utilizations in raising the instructive level Beside that disseminated poll to see the legitimization and the understudy for conventional strategy in learning the outcomes, of the examination of the examiners contained in this section and outline and show the requirement for an application [15, 16, 17].

This paper divided into several sections: introduction to use programming languages in different applications. Background to highlights the current active applications to learn programming courses for an undergraduate study. Method of how to use the research model and the survey design. The application development with interface and code section. The result section to show the demographic of participants and the survey feedback results. Finally, the conclusion of the application importance to improve the student programming skills.

2 Background

Starting late, the quick improvement of development has added to the headway of new educational gadgets. Likewise, the enormous dispersal of various kinds of ICT has led understudies to the consistent triumph of utilitarian discovering that energizes the improvement of progressively huge degrees of sensible capacities important in STEM preparing that applies to certifiable settings [18]. As [10] states, this data, implied as computational associating, develops the purposes of figuring structures, giving understudies the principal theory and models to understand issues and structure systems. 21 Self-learning or e-learning was excluded from the techniques for training before, which caused little trouble in individuals and the difference of levels among students was making pressure in the conveyance of data to the instructor. perhaps the best thing that supports learning and aids in its advancement is the disclosure through field excursions or sites and innovation [19, 20, 21]. Revelation is individual expertise when interests and mental movements are accessible. In the nineties, the advancement of learning systems started the emerge and took various structures from conventional learning. Significant organizations have created programs that advance self-Learning, prompting self-getting the hang of turning into a wellspring of benefit, e-learning=e-business. Numerous self-learning or e-learning ventures share a definition that is portrayed as exceptionally wide documented Another elective meaning of e-learning is a PC to help human procedure bolstered by programming and innovation [20, 22].

The connection between critical thinking and programming aptitudes is notable. Understudies with higher critical thinking capacities discover programming simple and they can ace programming with no or little challenges paying little mind to the programming condition [21]. In actuality, understudies with critical thinking capacities discover programming hard to comprehend and are frequently incapable of acing it. The before referenced gatherings of understudies ordinarily make up 66% of the whole class, the top, and most reduced thirds, individually. Shouldn't something be said about the "centre third" understudies? This is likely the most spoken to the gathering; those are understudies who can ace programming yet with certain troubles. Visual programming language conditions are instruments intended to connect all understudies hover perhaps the "centre third" understudies would pick up the most profit by that approach [23, 24, 25].

Right now, investigate the instructive and persuasive impact of utilizing Scratch for game-put together programming concerning fifth-grade primary school understudies dependent on their critical thinking capacities [24, 26]. Results introduced here affirm the beneficial outcome of utilizing Scratch as the starting programming language for game-put together programming concerning "centre third" understudies, contrasted with Python as the content-based programming language. Watchwords: programming, Scratch, critical thinking, primary school, "centre third" understudied. This examination was led with the reason to look at the essential programming ideas understanding, concerning two programming dialects: Python and Scratch. The objective gathering re primary school understudies. The essential objective of this examination is to discover the distinctions in understudies' outcomes between pre-tests and tests following the Python and Scratch addresses. The subsequent objective is to analyze the distinctions

in mentalities towards programming and the programming language utilized [26, 27, 28, 31] When instructing kids programming, this specific hypothesis (Behaviorism) can be consolidated into an innovative programming device by remunerating kids for performing admirably when getting the hang of programming, while not giving them rewards when they have not made any accomplishments.

PC writing computer programs is huge instruction to everyone, except it is constantly thought to be troublesome. Among the fundamental reasons is that most understudies can't tackle the given programming issues and neglect to ace different various aptitudes one after another, for example, grammar and semantic programming language [24, 29, 32, 33]. Innovative critical thinking abilities, programming, PC equipment, and applications structure an idea that is otherwise called computational reasoning [7]. As indicated by [10, 11] when people utilize sensible deduction to take care of complex issues by understanding the issue in little parts and utilizing the Mathematical way to deal with fathom it, they are utilizing computational reasoning that eventually prompts the development of PC applications. [10] additionally expressed that computational reasoning is logical and fit for creating order line calculations for the PC to complete assignments to tackle issues., writing computer programs is a medium to a computational deduction with application frameworks and equipment utilized in different fields [15]. Truth be told, computational reasoning is firmly connected to science, innovation, and society as a result of the legitimate, scientific, efficient and compelling arrangement of critical thinking that is required constantly to address the issues of human life [9, 31]. Consequently, the significance of computational speculation in human life additionally causes training to identify with computational reasoning to be exceptionally applicable.

In Computer Science, training identified with computational reasoning is presented through programming subjects. Among the aptitudes that make up the idea of computational reasoning is savvy to plan issues, settle on choices, and tackle inventive issues [34, 35]. Furthermore, human capacities take care of issues through sensible reasoning and code-composing aptitudes prompting the development of PC applications and equipment creation representing accomplishment for computational reasoning [16, 20].

Since writing computer programs is as yet the most moving subject to be aced by understudies from the figuring field [16, 35], the fundamental components in computational believing should be investigated. For that reason, programming modules utilizing critical thinking approaches ought to be utilized to contemplate the degree of computational thinking about the understudies the thought that related knowledge significantly influences how one obtains and uses new information is the premise of the learning hypothesis of constructivism. As indicated by construct [4, 14, 34]. When arranging an investigation on the influence of programming experience on the learning of new programming ideas, it is essential to utilize a programming language that the developers are curious about, as for the sentence structure, yet additionally concerning the basic concepts [36, 37, 38].

3 Methodology

This research introduced applications that were created inside the exploration bunch as of late, with regards to the task. Not at all like most applications that have been grown far by individuals from our exploration gathering, the portable applications are

planned with thorough logical, instructive and phonetic procedures and speculations. accomplish work that makes these applications progressively advantageous to rehearse and become familiar with the components (jargon and syntax) and aptitudes (fundamentally oral comprehension) that they manage., (But it will be done in the coming months) [6, 22, 34].

This arrangement of uses is required to develop later on too, as some exploration is being done about other potential and integral applications, as to extend the sorts of abilities secured by the applications grew far. Many organizations offer their foundation for nothing or modest which causes instructors to improve their viewpoint on e-learning applications even with less specialized information.

Instructors need to pick their showing methodology on examining a solid system for structuring sensitive assignments, on fundamental information about key factors in cell phone application plan because of e-learning screen size, telephone size and on [13, 7]. Actualize their model and assess their item assessment. In these stages, talking with the instructive creator may positively affect their strategies and speed up. To accomplish the arrangement of the blossom, there are six stages (information, getting, application, examination, union and assessment). There are six main functions used as a basic construction, all of them with influencing to each other as shown in Figure 1. The following Figure 1 show the UML design of the model development with its main function.

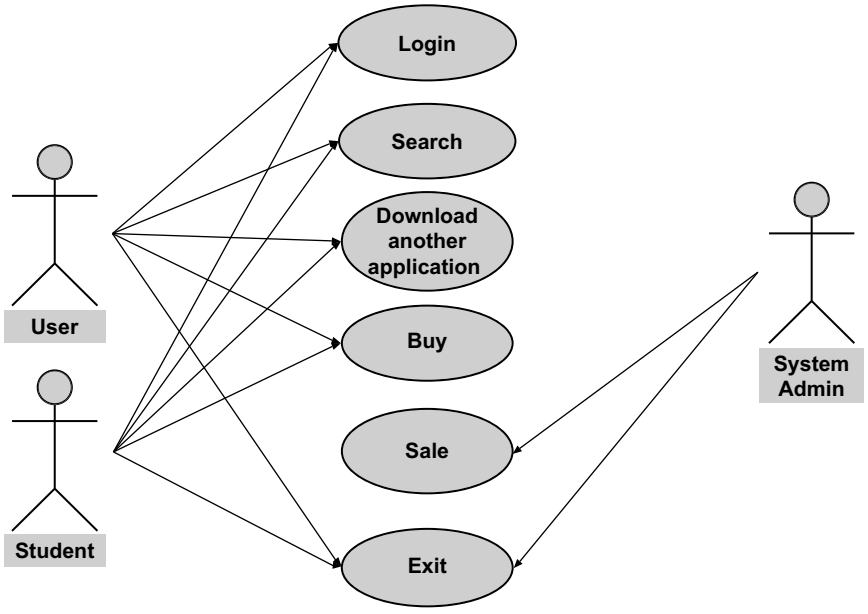

Fig. 1. UML diagram

4 Application development

The design phase for creating an application for programming languages learning especially for beginners, should be an effective model functions and guide the learners

to easy way and method of design. Besides the necessary skills of the team creators to be sure of doing the system as an easy access to ease of use.

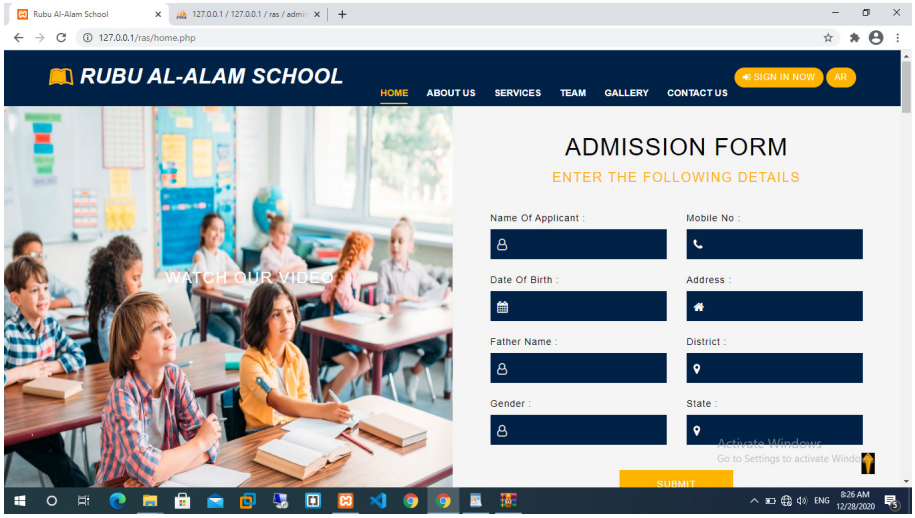

Fig. 2. Application main page

In our research used some programs such as PHP It is a scripting language primarily designed to be used for developing and programming b applications. CSS It means streamlined style pages, and CSS technology is used in designing b pages that the entire site can be controlled in terms of font type, colour, or size without having to write those codes or repeat them on every page within the site.

Html It is a markup language used in creating and designing pages and websites. This language is one of the oldest and most widely used languages in designing b pages. MySQL, which has become the standard in creating database applications on or off the b. MySQL was designed around three main concepts: speed, stability, and ease of use [5, 15]. Bootstrap is one of the most popular libraries ever used by website programmers, as modern website development no longer needs to rewrite every movement and every element of the website, and page organization has become simple with the help of some famous external libraries, led by Bootstrap.

This application started to create and arrived at the last stage, which is the start of decontamination, use, experimentation and direct use. The program was disseminated as an underlying duplicate to the understudies with directions for utilizing the application and testing and helping them use it and began utilizing it and afterwards assessing it. This segment clarifies the application has done, there are numerous highlights in the application that will refer to in detail [8, 16, 23].

The main part of important function added to the application web site:

1. Profile: View Admin Profile.
2. Add Admin: Add new admin to the school's System.

3. View Admin: View entire registered Admins in the School's System.
4. Add Class: Admin Can add new class in the school's System.
5. Add Subject: Admin can add new subject to the school's system.
6. Add Staff: A new administrative staff added using this page.
7. View staff: registered administrative staff could be viewed from here.
8. View student: registered student for each class can be viewed from here.
9. Change Password: admin can change his/her own password.

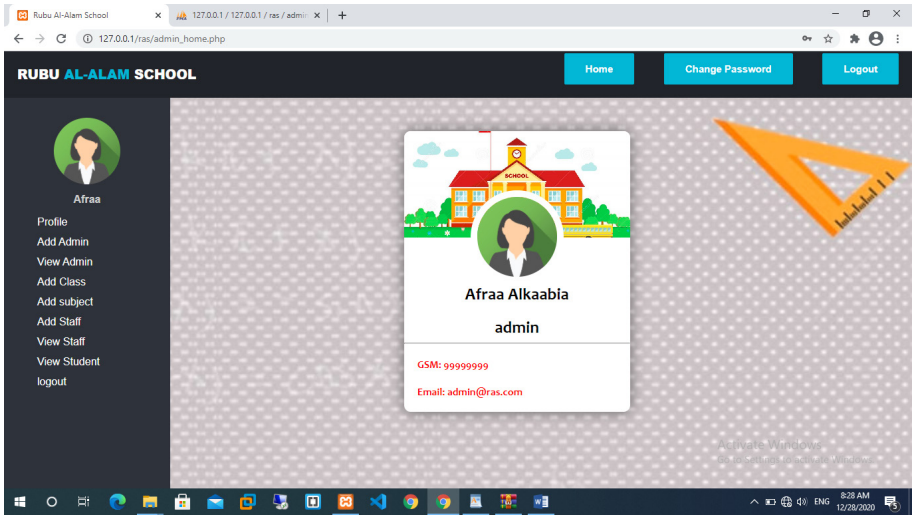

Fig. 3. Home page coding segment for student use

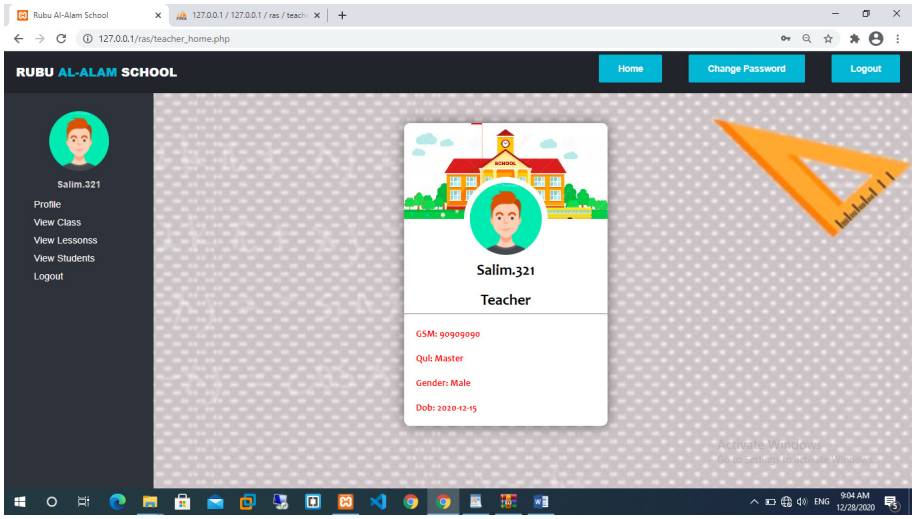

Fig. 4. Home page coding segment for teacher use

Figures 3 and 4, are trying our senior venture of assessment framework in BUC with the Academic Stan of Information innovation division to check the unwavering quality of the product, testing to guarantee the framework is liberated from any bug that can cause any sort of disappointment, testing guarantees the framework following the pre-requisite of the assessment structure in BUC and is required to ensure that the last item is easy to understand [10, 25].

Figure 5 show the initial stage of writing the code using java and PHP programming languages.

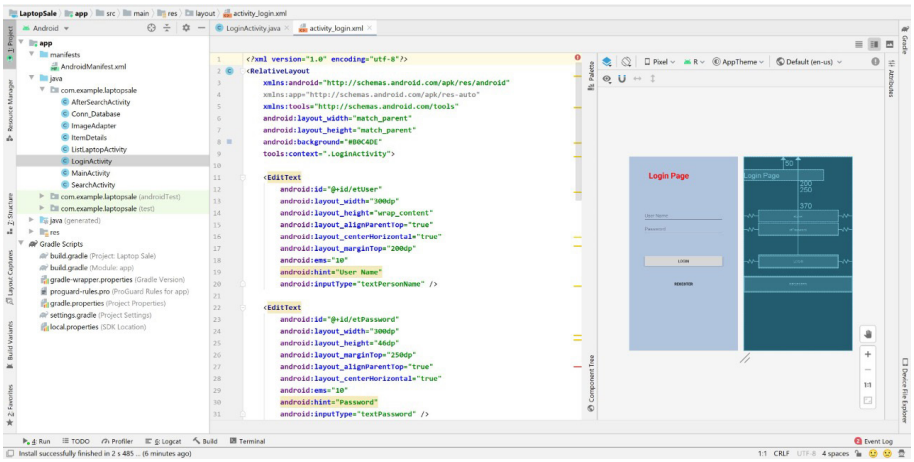

Fig. 5. Initial PHP coding for home page design

We crated one table for user or student, as shown in the Figure 6.

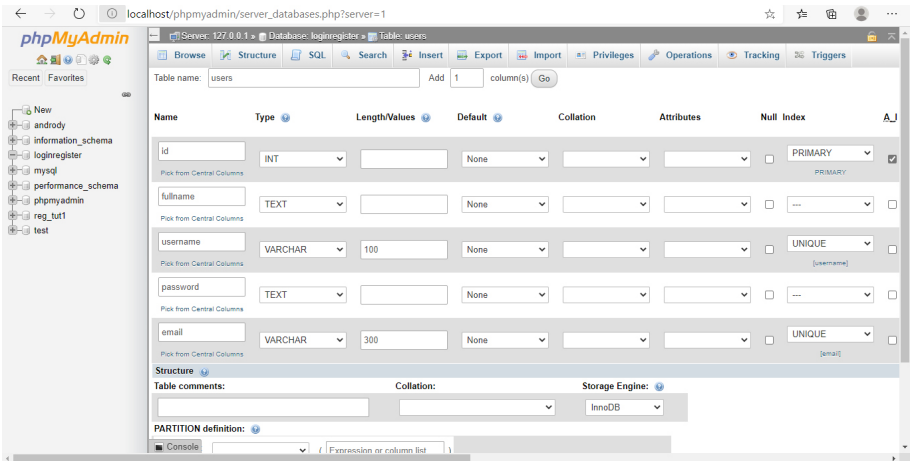

Fig. 6. Database for application users

5 Result and discussion

5.1 Pretest

A survey sent to 225 undergraduate students to get their feedback on implementing an application to learn different languages and to support their learning skills, as shown in Figure 7 that include the analyst of the gender.

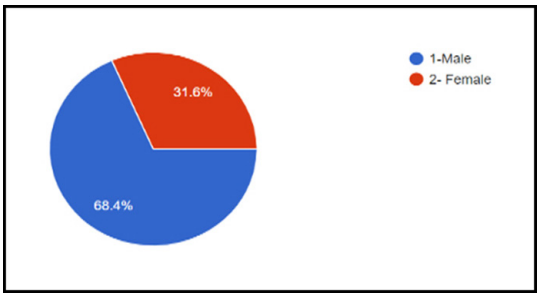

Fig. 7. Gender Pi chart of Q1

Table 1. The result validation of the question 1

		Participants	Ratio	Valid Ratio
Valid	Male	154	68.4	68.4
	female	71	31.6	31.6
	Total	225	100.0	100.0

Table 2. Explain the frequency of Q2

Age		Participants	Ratio	Valid Ratio
Valid	20 to 25	151	67.1	67.1
	25 to 30	51	22.7	22.7
	30 to 35	20	8.9	8.9
	35 to 40	3	1.3	1.3
	Total	225	100.0	100.0

From clear answers from understudies (IT) before they thought they had an application to assist them with tackling issues, for example, remembering and knowing the implications of code programming and use. as indicated by the abovementioned and the aftereffects of the appropriate responses acquired, chose to proceed with the undertaking and plan an application that underpins it.

5.2 Post-test

The system was given to students Through the use of an application questionnaire was given to be filled by them. the number of responses collected is only 120.

You learned the reserved words in the Java language, words that are only allowed to be used for the purpose for which they recreated?

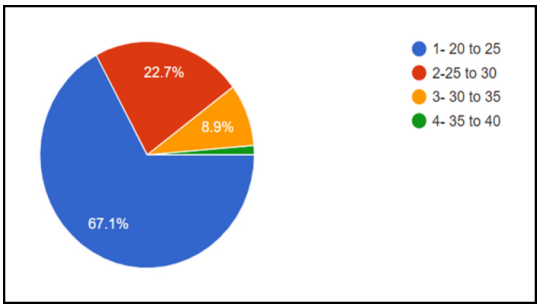

Fig. 8. Age Pi chart

Table 3. Explain the frequency of Q1

		Participants	Ratio	Valid
Valid	(SA)	38	31.7	31.7
	(AG)	29	24.2	24.2
	N	20	16.7	16.7
	(DAG)	9	7.5	7.5
	(SDA)	23	19.2	19.2
	Total	120	100.0	100.0

Question 1. The application includes an easy-to-use user interface that helped motivate the student to use the application?

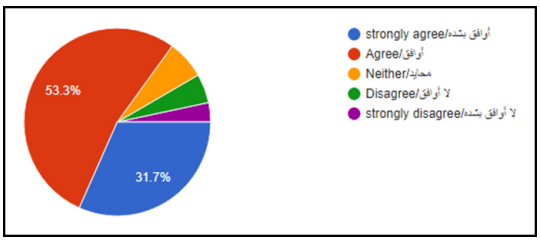

Fig. 9. Question 1 feedback

From the second questionnaire and the analysis for this question (Learning Mobile to support a student in programming language courses has a positive effect in increasing understanding of the topic.), the result which is highest values is strongly agreed 31.7%.

This application was evaluated based on the questionnaire that was distributed to students, and their satisfaction resulted in the ease of use and the benefit that the IT student needs in this application and easy user interface. After the investigations and studies that led and the consequences of the survey result it is affirmed for our examinations

and this demonstrated the application is simple for understudies and simple to utilize and work.

5.3 Evaluation phase

For the student. Take advantage of the educational curricula more broadly, so that there are exercises on lessons and educational games that establish what has been studied for the student by the teacher. Inform the student of his lessons at every available time, as the scientific material is constantly present in the application [5, 9, 12]. It provides the student with an opportunity to learn in computer programs more broadly for the purpose of educational requirements, which increases or raises his culture in this field, where he can use the application easily and comfortably [2]. Obtaining additional information in scientific subjects so that the student can understand more broadly [26]. The student's ability to reach the teacher and his colleagues at any time in case something in the scientific subjects is difficult for him.

For the teacher. It allows the teacher to share with his students about the scientific subjects all the educational means to explain the lessons easily and conveniently through the application instructions [4]. Easy to communicate at any time with students to explain scientific materials and answer their inquiries and what they may face is difficult to understand [8, 34]. Arranging and organizing the method of giving lessons and diversifying the educational content that attracts the student and pleases the teacher [4, 7, 33].

For parents. The ability to follow the progress of the educational process directly to the student. Follow-up of the student and participation level [14]. The ability to explain what was stubborn to the student due to the presence of explanations in the scientific material in the application [15, 21, 28].

6 Conclusion

This research tries to create an application to learn undergraduates how to program using Java language. In addition to create their own application with ease of use and access. Accordingly, right now demonstrate that the program accomplishes the destinations of the task are executing this undertaking relies upon some programming dialects as words and codes that are utilized in programming and notwithstanding a game to decide the degree of the understudy all the more precisely.

7 Future work

Add more programming languages. Add student Moodle and support online learning by video chat. Expand our database by adding more colleges and universities. The application's graphical UI gives a straightforward route through the application screens, and thus, the client needs to move to the primary screen to move from the fundamental screen to different screens, to stay away from this, future designers can execute the routed cabinet. The route cabinet is a board that moves from the left edge

of the screen and shows the fundamental route choices for the application. It can get to any level substance from any place in the application. Regardless of how profound the level a client is in. The research made in a manner that permits advancement, alteration and change, our executed of the application which helps the understudies and which is can be received by them, have accomplished the objective of usage process where is the overview gives us that fulfilment and acknowledged by the understudies by through of the survey that has distributed previously.

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