Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

Educational Application

Name	ID
Mai Mohammed Alotaibi	2200004606
Wadha nayef alsheddi	2200003246
Asma Zaher Alshehri	2200000484
Ghaida Jahaz Alotaibi	2200002466

Computer Science

1443هـ

Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

Table of content

Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

- ## Introduction

This idea started with team members to create an application in the Java programming language that aims to teach English to a target group, namely children, through which the level of the child is determined, and then the appropriate education for them.

- ## The Problem Statement

In response to COVID-19, classrooms have become online, and many online learning platforms have offered free access to their services, therefore, we wanted to create an educational program that will help the children education and assist the parents with child's educational development during the current tough time where the children aren't able to visit and learn in school.

- ## Target

The program aims to teach children the easy basics, then the degree of difficulty gradually increases, and after the instruction is completed, communication with the language people is then made, as it is the fastest way to obtain guaranteed and fast results. It is a wonderful exercise and has many positive benefits. Including learning from home saves time, effort, and money to go to language institutes, in addition to the ease of scheduling lessons in proportion to the times of parents and children in a healthy environment.

Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

UML

Name of Class:	Teacher	Main	Student
Variables:	+level:String -availability; String - password;String	studentsArr teachersArr questionsArr advanceTeachers intermediateTeachers beginnerTeachers	-score int -id int -teacher teacher
Methods:	+displayStudents()	+main()	-idGenerator() int getScore() getTeacher() getId() getName()

Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

Name of Class:	Quiz	Sys	Person
Variables:	-question: String -answer boolean		Name ; String Age int
Methods:	+getQuestion(): string +getQuestion(): boolean	+mainMenu() +teacherIndex() +teacherMenu() +createStudent() +sortStudents() +studentQuiz() +sortTeachers() +selectingTeacher()	-idGenerator() int +getName():String +getAge ()int

Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

Main class code:

```
Main - Notepad
File Edit Format View Help
import java.util.*;
import java.io.*;

public class Main {

    public static Scanner scanner = new Scanner(System.in);
    public static ArrayList<Student> studentsArr = new ArrayList<Student>();
    public static ArrayList<Teacher> teachersArr = new ArrayList<Teacher>();
    public static ArrayList<Quiz> questionsArr = new ArrayList<Quiz>();
    public static ArrayList<Teacher> advanceTeachers = new ArrayList<Teacher>();
    public static ArrayList<Teacher> intermediateTeachers = new ArrayList<Teacher>();
    public static ArrayList<Teacher> beginnerTeachers = new ArrayList<Teacher>();

    public static enum LEVELS {
        Advance, Intermediate, Beginner
    }

    public static void main(String[] args) {

        teachersArr.add(new Teacher("Ahmed", 40, LEVELS.Advance, "From 6 To 8 PM", "12341234"));
        teachersArr.add(new Teacher("Khaled", 40, LEVELS.Intermediate, "From 4 To 6 PM", "43214321"));
        teachersArr.add(new Teacher("Noura", 40, LEVELS.Beginner, "From 2 To 4 PM", "11223344"));

        questionsArr.add(new Quiz("Sheep Can Fly", false));
        questionsArr.add(new Quiz("Dogs Have Four Legs", true));
        questionsArr.add(new Quiz("Fish Live In Water ", true));
        questionsArr.add(new Quiz("There Are Twelve Day In Fortnight", false));
        questionsArr.add(new Quiz("There Are 26 Letters In The English Alphabetic", true));

        Sys.mainMenu();

    }
}
```

6

Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

Person class code:

*Person - Notepad

File Edit Format View Help

```
abstract public class Person {

    String name ;
    int age ;

    Person(String name , int age){
        this.name = name;
        this.age = age;
    }

    Person(){} ;

    abstract public String getName() ;
    abstract public int getAge() ;


}
```

Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

Quiz class code:

Quiz - Notepad

File Edit Format View Help

```java
public class Quiz {

    private String question;
    private boolean answer;

    public Quiz(String question, boolean answer) {
        this.question = question;
        this.answer = answer;
    }

    public String getQuestion() {
        return this.question;
    }

    public boolean getAnswer() {
        return this.answer;
    }

}
```

Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

Student class code:

```
Student - Notepad
File  Edit  Format  View  Help
import java.util.*;

public class Student extends Person {

    private int score;
    private int id;
    private Teacher teacher ;

    Student(String name, int age, int score , Teacher teacher) {
        super(name, age);
        this.score = score;
        this.id = idGenerator() ;
        this.teacher = teacher ;
    }

    public Teacher getTeacher() {
        return this.teacher ;
    }

    public int getScore() {
        return this.score;
    }

    public int getId() {
        return this.id;
    }

    @Override
    public String getName() {
        return name;
    }

    @Override
    public int getAge() {

        return age;
    }

    private int idGenerator() {
        Random r = new Random();
        return r.nextInt(1000) + 1 ;
    }

}
```

Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

Sys class code:

Sys - Notepad

File Edit Format View Help

```java
public class Sys {

    public static void mainMenu() {
        for(int i = 0 ; i < 50 ; i++){
            System.out.println();
        }

        System.out.println("< Welcome To English Courses For Children >");
        System.out.println(
                "Out Course Encourage Children To Learn And Experiment With\nLanguage In Safe, Supportive And Stimulating Classroom Environment .\n");


        System.out.println("1 - Sign Up As Student . ");
        System.out.println("2 - Sign In As Teacher . ");
        System.out.println("0 - Exit System");
        System.out.print("What Would You Like To Do : ");
        int choice = Main.scanner.nextInt();
        switch (choice) {
            case 1:
                createStudent();
                break;
            case 2:
                teacherMenu();
                System.out.print("Press Anything To Exit ... ");
                Main.scanner.nextLine();
                Main.scanner.nextLine();
                break;
            case 0:
                choice = 0;
        }

        if (choice != 0) {
            mainMenu();
        }


    }

    public static int teacherIndex(String name, String password) {
        int index = -1;

        for (int i = 0; i < Main.teachersArr.size(); i++) {
            if (Main.teachersArr.get(i).getName().equals(name)
                    && Main.teachersArr.get(i).getPassword().equals(password)) {
                index = i;
                break;
            }
        }
    }
```

10

Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

Sys - Notepad

File Edit Format View Help

```java
        return index;
    }

    public static void teacherMenu() {
        System.out.print("Please Enter Your Name : ");
        String name = Main.scanner.next();
        System.out.print("Please Enter Your Password : ");
        String password = Main.scanner.next();
        int index = teacherIndex(name, password);

        if (index != -1) {
            System.out.println("Welcome Teacher " + Main.teachersArr.get(index).getName());
            System.out.println("Those Are Your Students " + Main.teachersArr.get(index).getAvailability());
            for (int i = 0; i < Main.teachersArr.get(index).studentsArr.size(); i++) {
                System.out.println(
                        "Student Number " + (i + 1) + " : " + Main.teachersArr.get(index).studentsArr.get(i).getName());
            }
        } else {
            System.out.println("Wrong Name Or Password!\nPlease Try Again.");
            teacherIndex(name, password);
        }

    }

    public static void createStudent() {
        System.out.print("Please Enter Your Name : ");

        Main.scanner.nextLine();
        String name = Main.scanner.nextLine();
        System.out.print("Please Enter Your Age : ");
        int age = Main.scanner.nextInt();
        int score = studentQuiz();
        sortTeachers();
        Main.studentsArr.add(new Student(name, age, score, selectingTeacher(score)));
        sortStudents();
    }

    public static void sortStudents() {
        for (int i = 0; i < Main.studentsArr.size(); i++) {
            for (int j = 0; j < Main.teachersArr.size(); j++) {

                if (Main.studentsArr.get(i).getTeacher().equals(
                        Main.teachersArr.get(j))) {
                    Main.teachersArr.get(j).studentsArr.add(Main.studentsArr.get(i));
                }

            }
        }
    }
```

11

Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

Sys - Notepad

File Edit Format View Help

```java
public static int studentQuiz() {
    int score = 0;
    System.out.println("You Are Going To Have A Small Quiz Will Decide Your Level In English \nLet's Start");

    boolean answer;
    for (int i = 0; i < Main.questionsArr.size(); i++) {
        System.out.print(
                "Question Number " + (i + 1) + " " + Main.questionsArr.get(i).getQuestion() + " ?  ( T / F ) : ");
        String trueOrFalse = Main.scanner.next();
        answer = (trueOrFalse.equalsIgnoreCase("T")) ? true : false;
        if (answer == Main.questionsArr.get(i).getAnswer()) {
            score += 1;
        }
    }

    return score;
}

public static void sortTeachers() {
    for (int i = 0; i < Main.teachersArr.size(); i++) {
        if (Main.teachersArr.get(i).level == Main.LEVELS.Advance)
            Main.advanceTeachers.add(Main.teachersArr.get(i));
        if (Main.teachersArr.get(i).level == Main.LEVELS.Intermediate)
            Main.intermediateTeachers.add(Main.teachersArr.get(i));
        if (Main.teachersArr.get(i).level == Main.LEVELS.Beginner)
            Main.beginnerTeachers.add(Main.teachersArr.get(i));
    }
}

public static Teacher selectingTeacher(int score) {
    score = score / (Main.questionsArr.size() / score) ;
    String typeOfClass = (score == 3) ? "Intermediate" : (score > 3) ? "Advance" : "Beginner";
    System.out.println("You Are At " + typeOfClass + " Class");
    System.out.println("Now Please Select Your Teacher ");
    if (score >= 4) {
        for (int i = 0; i < Main.advanceTeachers.size(); i++) {
            System.out.println(Main.advanceTeachers.get(i).getName() + " Available "
                    + Main.advanceTeachers.get(i).getAvailability() + " Index ( " + i + " ) ");
        }
        System.out.print("Please Enter The Teachers Index : ");
        int index = Main.scanner.nextInt();
        return Main.advanceTeachers.get(index);
    } else if (score == 3) {
        for (int i = 0; i < Main.intermediateTeachers.size(); i++) {
            System.out.println(Main.intermediateTeachers.get(i).getName() + " Available "
                    + Main.intermediateTeachers.get(i).getAvailability() + " Index ( " + i + " ) ");
        }
```

12

Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

```java
            System.out.print("Please Enter The Teachers Index : ");
            int index = Main.scanner.nextInt();
            return Main.advanceTeachers.get(index);
        } else if (score == 3) {
            for (int i = 0; i < Main.intermediateTeachers.size(); i++) {
                System.out.println(Main.intermediateTeachers.get(i).getName() + " Available "
                        + Main.intermediateTeachers.get(i).getAvailability() + " Index ( " + i + " ) ");
            }
            System.out.print("Please Enter The Teachers Index : ");
            int index = Main.scanner.nextInt();
            return Main.intermediateTeachers.get(index);
        } else if (score < 3) {
            for (int i = 0; i < Main.beginnerTeachers.size(); i++) {
                System.out.println(Main.beginnerTeachers.get(i).getName() + " Available "
                        + Main.beginnerTeachers.get(i).getAvailability() + " Index ( " + i + " ) ");
            }
            System.out.print("Please Enter The Teachers Index : ");
            int index = Main.scanner.nextInt();
            return Main.beginnerTeachers.get(index);
        }

    return new Teacher();
}
```

Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

Teacher class code:

```java
import java.util.ArrayList;

public class Teacher extends Person {

    public Main.LEVELS level;
    private String availability ;
    private String password ;
    ArrayList<Student> studentsArr = new ArrayList<Student>();

    Teacher(String name, int age, Main.LEVELS level , String availability , String password) {
        super(name, age);
        this.level = level;
        this.availability = availability;
        this.password = password;
    }

    Teacher() {
    };

    public String getPassword(){
        return this.password;
    }

    public String getAvailability(){
        return this.availability;
    }


    @Override
    public String getName() {
        return name;
    }

    @Override
    public int getAge() {
        return age;
    }

    public void displayStudents() {
        for (int i = 0; i < this.studentsArr.size(); i++) {
            System.out.println(this.studentsArr.get(i).getName());
        }
    }

}
```

Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

Output :

```
< Welcome To English Courses For Children >
Out Course Encourage Children To Learn And Experiment With
Language In Safe, Supportive And Stimulating Classroom Environment .

1 - Sign Up As Student .
2 - Sign In As Teacher .
0 - Exit System
What Would You Like To Do : 2
Please Enter Your Name : Khaled
Please Enter Your Password : 43214321
Welcome Teacher Khaled
Those Are Your Students From 4 To 6 PM
Press Anything To Exit ... |
```

```
< Welcome To English Courses For Children >
Out Course Encourage Children To Learn And Experiment With
Language In Safe, Supportive And Stimulating Classroom Environment .

1 - Sign Up As Student .
2 - Sign In As Teacher .
0 - Exit System
What Would You Like To Do : 1
Please Enter Your Name : Asma
Please Enter Your Age : 21
You Are Going To Have A Small Quiz Will Decide Your Level In English
Let's Start
Question Number 1 Sheep Can Fly ? ( T / F ) : F
Question Number 2 Dogs Have Four Legs ? ( T / F ) : T
Question Number 3 Fish Live In Water  ? ( T / F ) : T
Question Number 4 There Are Twelve Day In Fortnight ? ( T / F ) : F
Question Number 5 There Are 26 Letters In The English Alphabetic ? ( T / F ) : T
You Are At Advance Class
Now Please Select Your Teacher
Ahmed Available From 6 To 8 PM Index ( 0 )
Please Enter The Teachers Index : 0
```

Project (run)   runnin

15

Kingdom of Saudi Arabia Ministry of Education
Imam Abdulrahman bin Faisal University
College of Science and Humanities
Computer Science Department

Conclusion:

We used Java language to create a complete educational application. This project has helped students and teachers to gain a better usage of technology in comparison to the traditional teaching style. the teachers can evaluate the student's level by letting the students use this application without the need for paper. also helps in setting a time for students to meet their teachers by having accounts in the system. Teachers can access their accounts and see how many students are registered to see them. In conclusion, it has devolved our knowledge of java and its usage in applications.