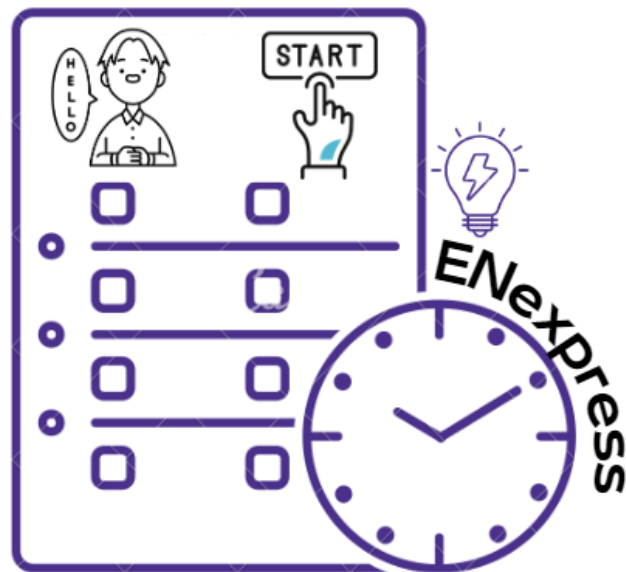




King Abdulaziz University
Faculty of Computing and Information Technology
DEPARTMENT OF COMPUTING SCIENCE
Artificial Intelligence - CPCS331



Project Title: English Express

Table of Content

List of Tables	3
List of Figures	3
Task Distribution	4
1 Introduction.....	5
1.1 Purpose of the system:.....	5
1.2 Users of the system:	5
1.3 Expert of the system:.....	5
1.4 Resource that will be used:.....	5
2 Body	6
2.1 List of rules:	6
2.2 Technique used to acquire knowledge from the system:	7
3 System's Flowchart.....	8
References.....	9
Appendix A: Source Code	10
Appendix B: Screenshot of Output	13

List of Tables

Table 1: Task Distribution	4
----------------------------------	---

List of Figures

Figure 1: System Flowchart.....	8
Figure 2: Output 1	13
Figure 3: Output 2.....	14
Figure 4: Output 3	15

Task Distribution

Tasks:

- Idea
- Code
- Rules
- Report (Introduction, body)
- Flowchart

Team Members	Task	Percentage
[Redacted]	Idea	100%
	Code	
[Redacted]	Rules	100%
[Redacted]	Introduction	
	Body	100%
	Flowchart	

Table 1: Task Distribution

- All team members contributed equally to this project.

1 Introduction

1.1 Purpose of the system:

Amongst the varying uses of artificial intelligence is the making of expert systems. An expert system, or ES, is a decision-making system that draws its insight from a knowledge base, which in turn is supplied by a human expert. English Express is an ES that can gauge a student's English knowledge with a level-determination test and display the result. The system provides the student with midlevel questions to understand the student's capability, then it suggests for the student to either proceed to an advanced level or remain on the same level. Upon answering all the questions correctly, the student should start seeking a higher level with questions that can pose some challenge. However, answering incorrectly means that the student needs more practice in the same level. Thus, English Express gives the student an awareness of his or her current standpoint. In understanding the student's level more accurately, the educators can have the students strive to improve their levels in a more individual process, rather than settling for a mediocre average—that might be too low for some and too high for others.

1.2 Users of the system:

Users of the system will include educators and students.

1.3 Expert of the system:

Contribution to the knowledge base of this ES will be done by holders of a degree in English education. Dr. Eman was consulted to give judgement of the proper English level-determination tools and methods that supply the system, English Express.

1.4 Resource that will be used:

Academic English language learning books.

2 Body

2.1 List of rules:

- Question 1:
 - Rule 1 “right answer”:
 - If the student writes answer “moved”.
 - Then the system displays “Question1: Right! Good job”.
 - Rule 2 “wrong answer”:
 - If the student writes answer “move”.
 - Then the system displays “Question1: Wrong! It's a simple past”.
- Question 2:
 - Rule 3 “right answer”:
 - If the student writes answer “studied”.
 - Then the system displays “Question2: Right! Good job”.
 - Rule 4 “wrong answer”:
 - If the student writes answer “study”.
 - Then the system displays “Question2: Wrong! It's a simple past”.
- Question 3:
 - Rule 5 “right answer”:
 - If the student writes answers “speak” in the first blank & “spoke” in the second blank.
 - Then the system displays “Question3: Right! Good job”.
 - Rule 6 “wrong answer”:
 - If the student writes answers “spoke” in the first blank & “spoke” in the second blank.
 - Then the system displays “Question3: The first blank is Wrong!”.
 - Rule 7 “wrong answer”:
 - If the student writes answers “speak” in the first blank & “speak” in the second blank.
 - Then the system displays “Question3: The second blank is Wrong!”.
 - Rule 8 “wrong answer”:
 - If the student writes answers “spoke” in the first blank & “speak” in the second blank.

- Then the system displays “Question3: ALL of blanks are Wrong!”.
- Question 4:
 - Rule 9 “right answer”:
 - If the student writes answer “n”.
 - Then the system displays “Question4: Right! Good job”.
 - Rule 10 “wrong answer”:
 - If the student writes answer “v”.
 - Then the system displays “Question4: Wrong! It's a noun”.
- Question 5:
 - Rule 11 “right answer”:
 - If the student writes answer “v”.
 - Then the system displays “Question5: Right! Good job”.
 - Rule 12 “wrong answer”:
 - If the student writes answer “n”.
 - Then the system displays “Question5: Wrong! It's a verb”.
- All right answers rule:
 - Rule 13:
 - If the student chooses all right answers in question1, question2, question3, question4, and question5.
 - Then the system displays “CONGRATS!! All your answers are right, you can pass to level two”.

2.2 Technique used to acquire knowledge from the system:

The system has to first take some input from the user then it starts to work from some initial state till it reaches an end goal, which makes the techniques used in this ES: user input and forward chaining.

3 System's Flowchart

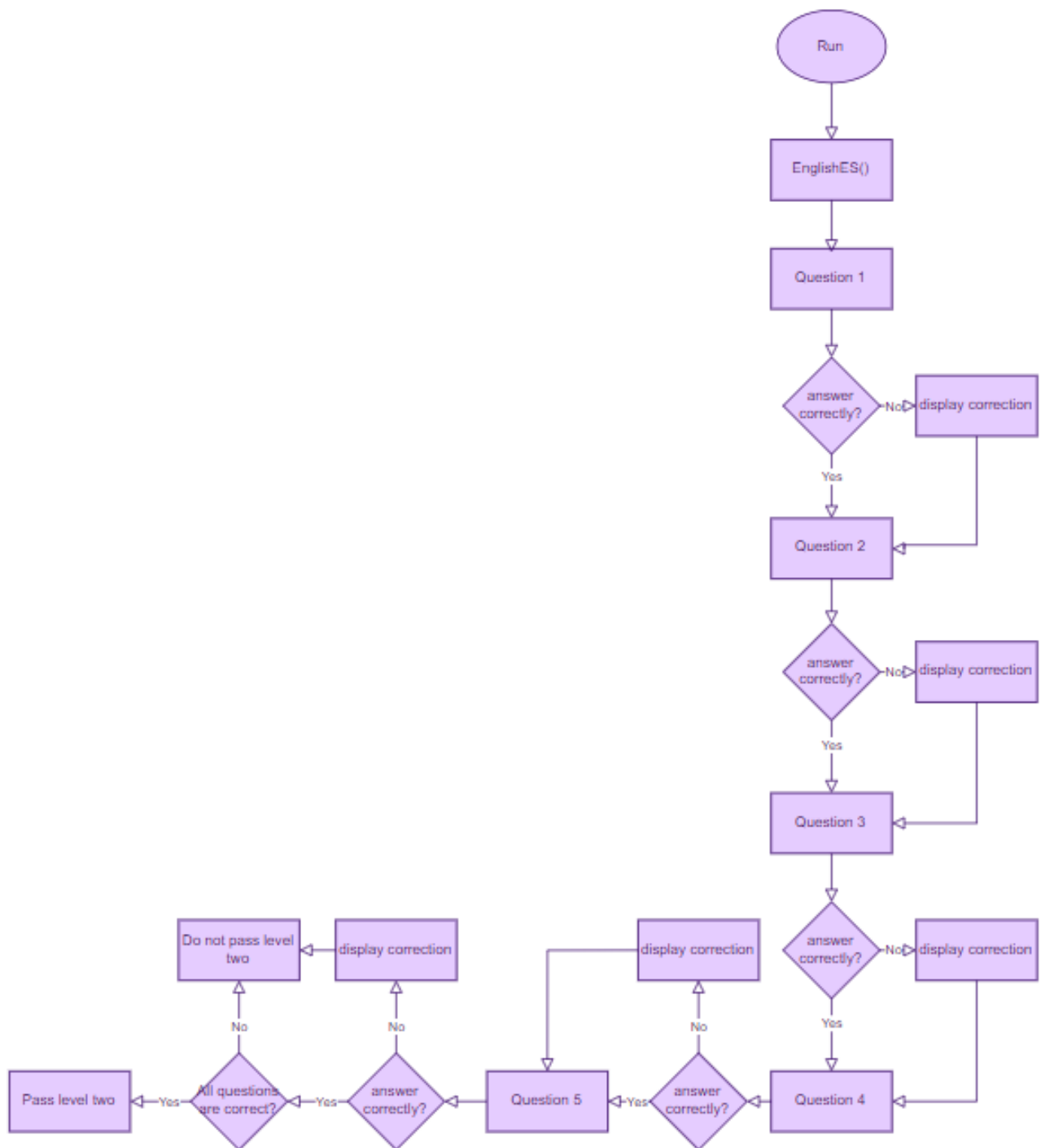


Figure 1: System Flowchart

References

1. Aneja, A. (2021, November 9). *Expert systems*. GeeksforGeeks. Retrieved October 7, 2022, from <https://www.geeksforgeeks.org/expert-systems/>
2. Hogue, A. (2007, August 30). *First Steps in Academic Writing (The Longman Academic Writing Series, Level 2)* (2nd ed.). Pearson Education ESL.

Appendix A: Source Code

```
! pip install experta
from experta.engine import Agenda
from experta import*
class EnglishES(Fact):
    pass

class EnglishESKBA(KnowledgeEngine):

    #Question 1 -----

    @Rule (EnglishES(ques1=('moved'))))
    def answer1(self):

        print(" - Question1: Right! Good job")

    @Rule (EnglishES(ques1=('move'))))
    def answer2(self):
        print(" - Question1: Wrong! It's a simple past")

    #Question 2-----
    @Rule(AND(EnglishES(ques2=('studied'))))
    def answer3(self):

        print(" - Question2: Right! Good job")

    @Rule(OR(EnglishES(ques22=('study'))))
    def answer4(self):
        print(" - Question2: Wrong! It's a simple past")

    #Question 3-----
    @Rule(AND(EnglishES(ques3=('speak')),EnglishES(ques33=('spoke'))))
    def answer5(self):
        print(" - Question3: Right! Good job")

    @Rule(AND(EnglishES(ques3a=('spoke')),EnglishES(ques33a=('spoke'))))
    def answer6(self):
        print(" - Question3: The first blank is Wrong! ")

    @Rule(AND(EnglishES(ques3a=('speak')),EnglishES(ques33a=('speak'))))
    def answer7(self):
        print(" - Question3: The second blank is Wrong! ")

    @Rule(AND(EnglishES(ques3a=('spoke')),EnglishES(ques33a=('speak'))))
    def answer8(self):
        print(" - Question3: All of blanks are Wrong! ")
```

```

#Question4-----
@Rule (EnglishES(ques4=('n'))
def answer9(self):
    print(" - Question4: Right! Good job")

@Rule (EnglishES(ques44=('v'))
def answer10(self):
    print(" - Question4: Wrong! It's a noun")

#Question5-----
@Rule (EnglishES(ques5=('v'))
def answer11(self):
    print(" - Question5: Right! Good job")

@Rule (EnglishES(ques55=('n'))
def answer12(self):
    print(" - Question5: Wrong! It's a verb")

#The result -----
#Right answers -----
@Rule (AND(EnglishES(ques1='moved'),EnglishES(ques2='studied'),
    EnglishES(ques3='speak'),EnglishES(ques33='spoke'),EnglishES(ques4='n'),EnglishES(ques5='v'))
def answer13(self):
    print("CONGRATS!! All your answers are right, you can pass to level two.")

engine = EnglishESKBA()

engine.reset() # Prepare the engine for the execution.
print("\n***** WELCOME MY FRIEND *****\n")
print("Let me give you the following quiz to test your knowledge in English Language\n")

print("*Lets start with GRAMMER: ")
print(" - Question1\n They .... to London in 2013.")
question1 = input(" Fill the blank (move|moved)? ").lower()
print("\n")
print(" - Question2\n Yesterday, She .... English in school.")
question2 = input(" Fill the blank (study|studied)? ").lower()
print("\n")
print(" - Question3\n She didn't .... English. She .... Tagalog.")
question3 = input(" Fill the first blank (speak|spoke)? ").lower()
question33 = input(" Fill the second blank (speak|spoke)? ").lower()
print("\n")

```

```

#-----
print("* now we will move to VOCABULARY 'word forms': ")
print(" - Question4\n I enjoy travel.")
question4 = input(" Word 'travel' is a (N for noun|V for verb)?").lower()
print("\n")
print(" - Question5\n Hard work results in success.")
question5 = input(" Word 'result' is a (N for noun|V for verb)?").lower()

engine.declare(EnglishES(q1 = question1), EnglishES(q2 = question2), EnglishES(q3a = question3), EnglishES(q33a = question3),
               EnglishES(q4 = question4), EnglishES(q5 = question5))

print("\n-----")
print("----- The Results -----")
print("-----\n")
print("*NOTE*: You will get a message if you move to LEVEL TWO! All the best.\n")

engine.declare(EnglishES(ques5 = question5), EnglishES(ques55 = question5))
engine.declare(EnglishES(ques4 = question4), EnglishES(ques44 = question4))
engine.declare(EnglishES(ques3a = question3), EnglishES(ques33a = question3))
engine.declare(EnglishES(ques3 = question3), EnglishES(ques33 = question3))
engine.declare(EnglishES(ques2 = question2), EnglishES(ques22 = question2))
engine.declare(EnglishES(ques1 = question1), EnglishES(ques11 = question1))

engine.run() # Run engine

```

Appendix B: Screenshot of Output

1.

```
***** WELCOME MY FRIEND *****

Let me give you the following quiz to test your knowledge in English Language

*Lets start with GRAMMER:
- Question1
  They .... to London in 2013.
  Fill the blank (move|moved)? moved

- Question2
  Yesterday, She .... English in school.
  Fill the blank (study|studied)? studied

- Question3
  She didn't .... English. She .... Tagalog.
  Fill the first blank (speak|spoke)? speak
  Fill the second blank (speak|spoke)? spoke

* now we will move to VOCABULARY 'word forms':
- Question4
  I enjoy travel.
  Word 'travel' is a (N for noun|V for verb)?n

- Question5
  Hard work results in success.
  Word 'result' is a (N for noun|V for verb)?v

-----
----- The Results -----
-----

*NOTE*: You will get a message if you move to LEVEL TWO! All the best.

CONGRATS!! All your answers are right, you can pass to level two.
- Question1: Right! Good job
- Question2: Right! Good job
- Question3: Right! Good job
- Question4: Right! Good job
- Question5: Right! Good job
```

Figure 2: Output 1

2.

```
***** WELCOME MY FRIEND *****

Let me give you the following quiz to test your knowledge in English Language

*Lets start with GRAMMER:
- Question1
  They .... to London in 2013.
  Fill the blank (move|moved)? moved

- Question2
  Yesterday, She .... English in school.
  Fill the blank (study|studied)? study

- Question3
  She didn't .... English. She .... Tagalog.
  Fill the first blank (speak|spoke)? speak
  Fill the second blank (speak|spoke)? spoke

* now we will move to VOCABULARY 'word forms':
- Question4
  I enjoy travel.
  Word 'travel' is a (N for noun|V for verb)?n

- Question5
  Hard work results in success.
  Word 'result' is a (N for noun|V for verb)?n

-----
----- The Results -----
-----

*NOTE*: You will get a message if you move to LEVEL TWO! All the best.

- Question1: Right! Good job
- Question2: Wrong! It's a simple past
- Question3: Right! Good job
- Question4: Right! Good job
- Question5: Wrong! It's a verb
```

Figure 3: Output 2

3.

```
***** WELCOME MY FRIEND *****

Let me give you the following quiz to test your knowledge in English Language

*Lets start with GRAMMER:
- Question1
  They .... to London in 2013.
  Fill the blank (move|moved)? move

- Question2
  Yesterday, She .... English in school.
  Fill the blank (study|studied)? study

- Question3
  She didn't .... English. She .... Tagalog.
  Fill the first blank (speak|spoke)? spoke
  Fill the second blank (speak|spoke)? speak

* now we will move to VOCABULARY 'word forms':
- Question4
  I enjoy travel.
  Word 'travel' is a (N for noun|V for verb)?v

- Question5
  Hard work results in success.
  Word 'result' is a (N for noun|V for verb)?n

-----
----- The Results -----
-----

*NOTE*: You will get a message if you move to LEVEL TWO! All the best.

- Question1: Wrong! It's a simple past
- Question2: Wrong! It's a simple past
- Question3: All of blanks are Wrong!
- Question4: Wrong! It's a noun
- Question5: Wrong! It's a verb
```

Figure 4: Output 3