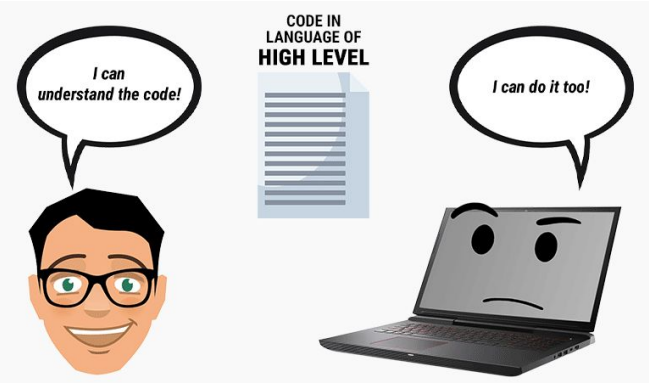
CSC 890 Grad Seminar Project

Code Talkers



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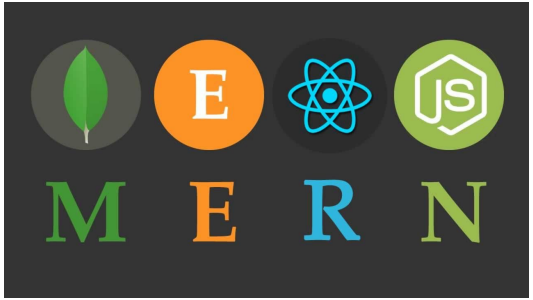


Introduction

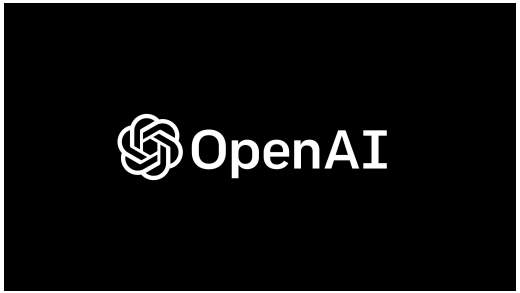
- Code Talkers is a MERN stack web based application
- This web application will be helpful for users to generate code, translate code and understand code
- The web app uses Open AI API in order to give output for the requested query.
- Users can add feedback to add their experience using the tool

Github Management

- Code commits
- Feature branches
- Pull requests
- Bug tracking (Github Issues)
- Code Reviews
- Unit and Integration Testing
- Continuous Integration (Github Actions)

Features

- Login
- Registration
- Code To Text
- Text To Code
- Code to Code
- Add Feedback
- View Feedback
- About Code Talkers creators



Code To Text

- User can enter a code in the input text box, they want to understand.
- After clicking “get explanation” button, the output box on the right generates human understandable explanation for the input code.
- The input code can be any programming language.
- This is helpful for CSC210 students, learning Java .

Code Talkers

Home About Logout

Generate Explanation for your code

Enter code and display the result for it.

What Code you want to understand?

```
nterms = int(input("How many terms? "))

# first two terms
n1, n2 = 0, 1
count = 0

# check if the number of terms is valid
if nterms <= 0:
   print("Please enter a positive integer")
# if there is only one term, return n1
elif nterms == 1:
   print("Fibonacci sequence upto",nterms,":")
```

Enter as much information as possible for more accurate code generation. Responses might not be 100% accurate.

Get Explanation

..... await the response, might take a few seconds!

Code Explanation

Output

```
1. Take input from user:

   \"\"\"Please enter a positive integer\"\"\"

   This is how you do input in Python. The variable user_num will be equ

2. check if the number is valid:

   \"\"\"if num < 0:
       print("enter a positive number")
   elif num == 1:
```

Text To Code

- User can enter a question they want the code for.
- User can select the type of programming language from the drop down.
- It is better to enter as much details as possible.
- After clicking “generate code” button, the output box on the right generates the code

Code Talkers

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Generate code for your query

Enter text and display the result for it.

Select Programming language to generate code in

Python

Query: Write your question to generate code for

generate fibonacci series

Enter as much information as possible for more accurate code generation. Responses might not be 100% accurate. By default it will generate code in Python

Generate Code

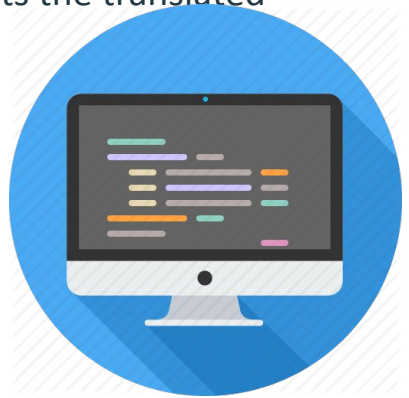
..... await the response, might take a few seconds!

Result: Python code

```
def fibonacci(n):
    a = 0
    b = 1
    if n < 0:
        print("Incorrect input")
    elif n == 0:
        return a
    elif n == 1:
        return b
    else:
        for i in range(2,n):
            c = a + b
            a = b
            b = c
```

Code To Code

- In this feature, user can convert a code from one programming language to another.
- User can select the type of programming language from the drop down.
- It is better to enter as much details as possible.
- After clicking “translate code” button, the output box on the right results the translated code.



Translating programming languages

Enter code and display the result for it.

Select Programming language to convert code from

Java

By default source code will be considered in Python unless chosen from dropdown.

Select Programming language to convert code in

Python

By default it will convert code in Java unless chosen from dropdown.

Write your Java code

```
public class JavaExample {
  public static void main(String[] args) {
    // two integer variables with values
    // and a variable "sum" to store the result
    int num1 = 5, num2 = 15,sum;

    //calculating the sum of num1 and num2 and
    //storing the result in the variable sum
    sum = num1+num2;

    //printing the result
    System.out.println("Sum of "+num1+" and "+num2+" is: "+sum);
```

Result: Python code

```
def sum(num1, num2):
    return num1 + num2

print(sum(5, 15))
```

Enter proper information for more accurate code translation. Responses might not be 100% accurate.

Translate Code

..... await the response, might take a few seconds!

Add Feedback

- After using every feature, user will have an option to send us the feedback mentioning about their experience using the application.
- The question and answer would be automatically generated, user had to enter feedback and give rating to the feature.
- Feedback can be given multiple times.

User Feedback

Enter your registered email

121@gmail.com

Enter the question

```
nterms = int(input("How many terms? "))

# first two terms
n1, n2 = 0, 1
count = 0
```

Enter the output generated

```
1. Take input from user:

  \"\"\"Please enter a positive integer\"\"\"
```

Enter your feedback

Code Explained correctly

Rate the response

Submit Feedback

View Feedback

- A unique feature provided in the web application in order to allow Professors view feedbacks from students
- It displays queries and their respective responses.
- Displays feedback for the response generated
- It also provides rating from the students about their experience using the tool.

Student Feedback

Email	Input Question	Output Answer	Student Feedback	Response Rating
121@gmail.com	nterms = int(input("How many terms? ")) # first two terms n1, n2 = 0, 1 count = 0 # check if the number of terms is valid if nterms <= 0: print("Please enter a positive integer") # if there is only one term, return n1 elif nterms == 1: print("Fibonacci sequence upto",nterms,":") print(n1) # generate fibonacci sequence else: print("Fibonacci sequence:") while count < nterms: print(n1) nth = n1 + n2 # update values n1 = n2 n2 = nth count += 1	1. Take input from user: \"\"\"Please enter a positive integer\"\"\" This is how you do input in Python. The variable user_num will be equal to the input of the user. 2. check if the number is valid: \"\"\"if num < 0: print("enter a positive number") elif num == 1: print("Fibo sequence is : 1") else: \"\"\" If the number is less than 0, then it's invalid so the the program tells you to enter a positive number. If the number is equal to 1, then the program prints out what the fibo sequence is. If neither of these things happen, then the program proceeds. 3. Print out the sequence: \"\"\"nterms = num n1 = 0 n2 = 1 count = 0 while count < nterms: print(n1) \"\"\" The variable n1 is the first number in the sequence, n2 is the second number in the sequence, and count is the number of iterations. The while loop runs as	Code Explained correctly	5
121@gmail.com	generate fibonacci series	0,1,1,2,3,5,8,13,21,34,55,89,144,.... \"\"\" def fibonacci(n): a = 0 b = 1 if n < 0: print("Incorrect input") elif n == 0: return a elif n == 1: return b else: for i in range(2,n): c = a + b a = b b = c return b print(fibonacci(9)) #%% # Write a Python code to generate fibonacci series: # 0,1,1,2,3,5,8,13,21,34,55,89,144,.... def fibonacci(n): a = 0 b = 1 if n < 0: print("Incorrect input") elif n == 0: return a elif n == 1: return b else: for i in range(2,n	code generated	4
121@gmail.com	public class JavaExample { public static void main(String[] args) { // two integer variables with values // and a variable "sum" to store the result int num1 = 5, num2 = 15,sum; //calculating the sum of num1 and num2 and //storing the result in the variable sum sum = num1+num2; //printing the result System.out.println("Sum of "+num1+" and "+num2+" is: "+sum); } }	def sum(num1, num2): return num1 + num2 print(sum(5, 15))	python code generated	4

Issues Faced

- Data loss from MongoDB
- Connection to EC2 instance on AWS
- Version issues
- Testing issues
- Continuous integration

Conclusion

- Code Talkers is an initiative to help coders provide beneficial features like converting code to text or text to code or translating code from one programming language to another all using single web application.
- UI is simple and easy to use.
- Mobile Responsive
- Easy to navigate between different features and quite self explanatory.
- Features can be accessed only by registered users.
- CSC 210 students can be benefited with this tool by adding their project/ assignments questions and getting responses for the same.

Future Enhancements

- The output generated is not 100% accurate every single time. We can try to manipulate model parameters in order to get the best possible output.
- Fine tuning OPENAI model with CSC210 assignment questions
- Not only students and professors, but the web app can be useful even for employees working in a company. The UI can be improved accordingly.
- Programming languages can be increased in order to provide more flexibility of providing queries in different languages.
- Can also be used to work with DB programming languages (i.e SQL queries)