Visvesvaraya National Institute of Technology, Nagpur

Department of Electronics and Communication Engineering

<u>Project Report</u>

Submitted to: Dr. Vipin Kamble

Course: Object Oriented Programming (ECL 205)

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Project Title: North West Corner Method and Newton's Raphson Method with Speech Recognition

Submitted By:

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Project Summary (max 100 words):

The North West Corner Method and Newton's Raphson Method are essentially solved with this project. In order to easily start our code without having to type anything, we also included speech recognition in our code. Further, we use the following libraries in our code to implement additional functionalities:

- Tkinter : for GUI
- PyPDF2 : for pdf work
- pyttsx3 : text to speech library
- speech_recognisation

- datetime
- pyautogui : for screenshot and controlling system volume
- webbrowser
- pywikihow : for how to do mode
- messagebox
- cv2 : to open camera
- pytz : to tell about time
- sympy : math library

The login and register screens are where the software starts. To access the software, a user must first sign up with an email address and password. After completing registration, the user must visit the login screen and enter their login information in order to access the programme. Using file handling, we save the email and password information in the text document.

The programme then begins with a greeting and the time, after which we need to say the command that we wish to execute. Using the takecommand() function, the programme takes the command and stores the result in the variable query. Then, it checks if that query is present in our programme using nested if else statements, and call that function as a result. Every command has a unique function that we defined so that we can quickly retrieve it. As soon as the first command that was running finished, it once more began to listen for the next command.

To make it simple to enter our input and obtain a solution, we used tkinter for the Newton's Raphson method and the north-west corner method programme.

1. **Project Title:** North West Corner Method and Newton's Raphson Method with speech recognition.

2. **Software Requirements:** Visual Studio Code

3. **Project Description:**

North West Corner Method: The North West corner method is a technique for calculating an initial feasible solution for a transportation problem.
In this method, we must select basic variables from the upper left cell, i.e., the North-west corner cell.
    It has three steps:

- Find the north west corner cell of the transportation table.

- Allocate as much as possible to the selected cell, and adjust the associated amounts of supply and demand by subtracting the allocated amount.

- Cross out the row or column with 0 supply or demand.

Newton Raphson Method: The Newton-Raphson method (also known as Newton's method) is a way to quickly find a good approximation for the root of a real-valued function f(x) = 0. It uses the idea that a continuous and differentiable function can be approximated by a straight line tangent to it.

It can be efficiently generalized to find solutions to a system of equations. Moreover, we can show that when we approach the root, the method is quadratically convergent.

It requires only one guess. Formulation of this method is simple. So, it is very easy to apply. It has simple formula so it is easy to program.

How it works?

The Newton-Raphson method begins with an initial estimate of the root, denoted x0≠xr, and uses the tangent of f(x) at x0 to improve on the estimate of the root. In particular, the improvement, denoted x1, is obtained from determining where the line tangent to f(x) at x0 crosses the x-axis.

Speech Recognition: It is a Voice-Based AI Assistant which is developed in Python Programming Language. It uses Different Technologies to add new unique features. It can Automate Tasks with just One Voice Command. It is a Desktop Based AI Assistant.

Functionalities of Speech Recognition:

- North West Corner Method

- Newton Raphson Method

- Volume up/down/mute

- Activate how to do mode

- Show note

- Read pdf

- Open WhatsApp

- Search YouTube

- Play gaana music

- Screenshot

- Open google

4. Conclusion:

With the help of Speech Recognition, we can do different task easily instead of typing and searching.

By North-west corner method we are able to find the initial basic feasible solution to a transportation problem so that the total cost of transportation is minimized.

With the Newton Raphson Method we can find the root of the equation by simply entering the equation.

5. References: YouTube channel: code with Harry , for learning GUI using Tkinter. We also read the python documentation libraries.