DNA Storage using Polar Codec

User Manual

Web App

Encoder: **http://hn8qenyu4brw.app.pywebio.online/**

Decoder: **http://hc2zz2pry0cj.app.pywebio.online/**

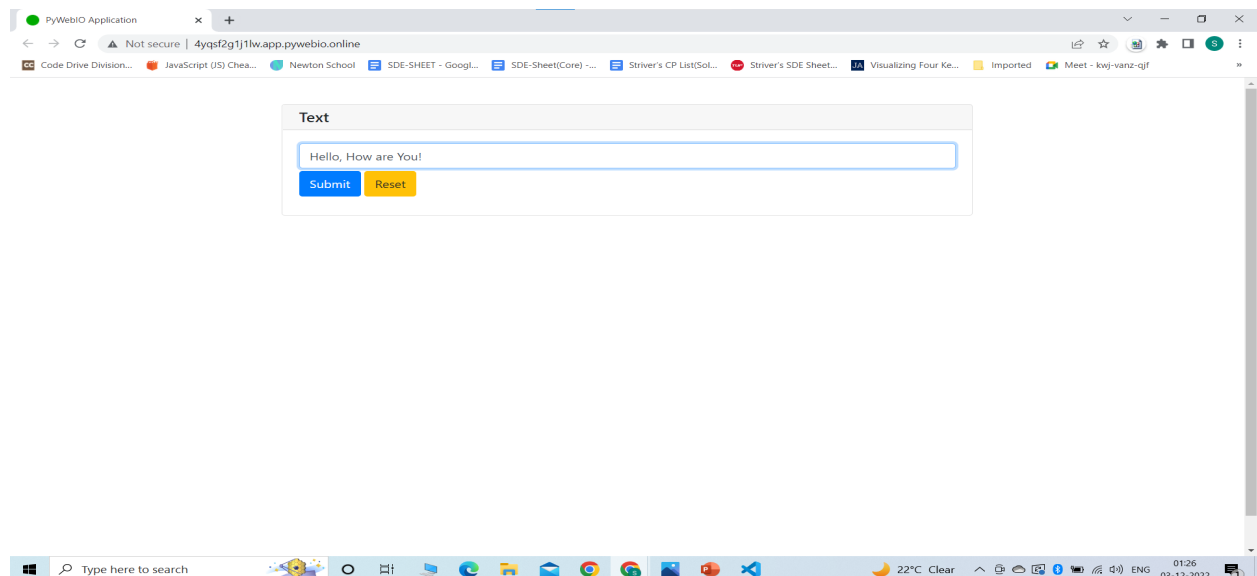## GitHub Repository: https://github.com/KathanS/DNA_Codec

DNA Polar Codec-Encoder: This web application is used to encode the data into a DNA string which can be used further for DNA Storage.
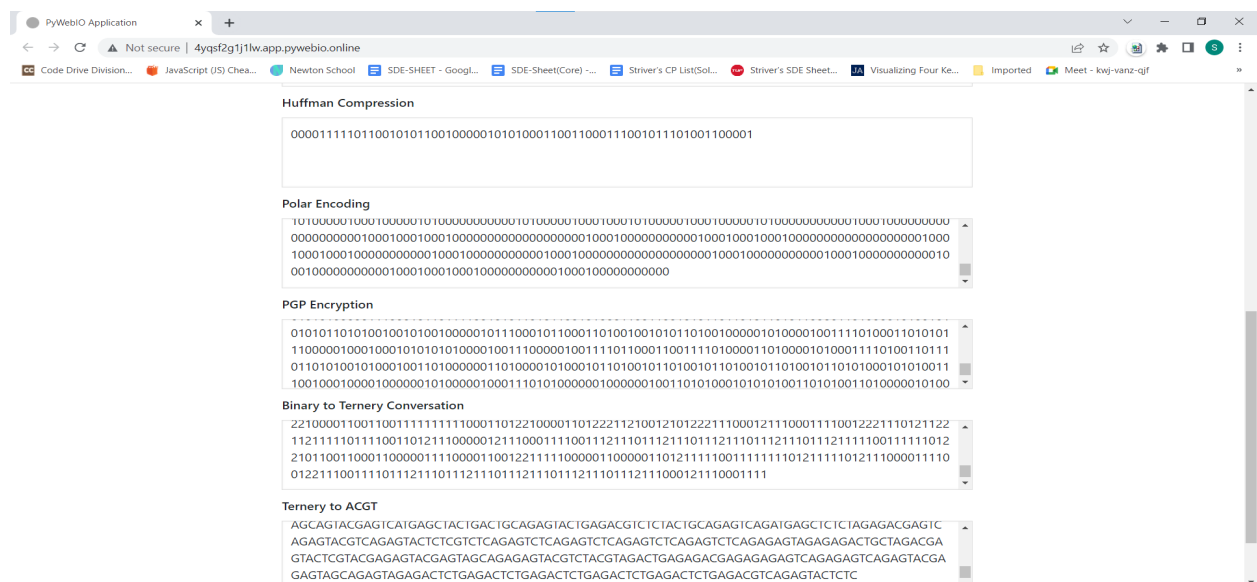
Step 1: Open DNA Polar Encoder using the link given. It will open the below web application.

Step 2: It will ask for the text to be encoded. Copy-Paste the text that you want to encode. Then click on submit. The below image shows the final DNA string for the input "**Hello World**".
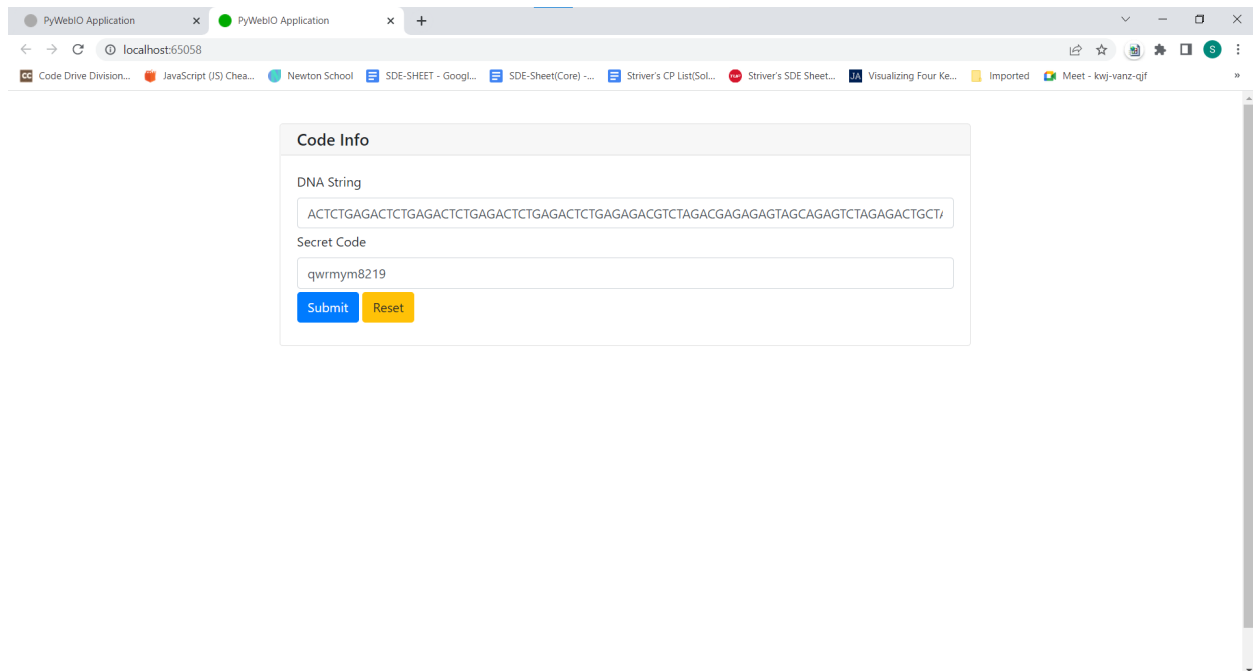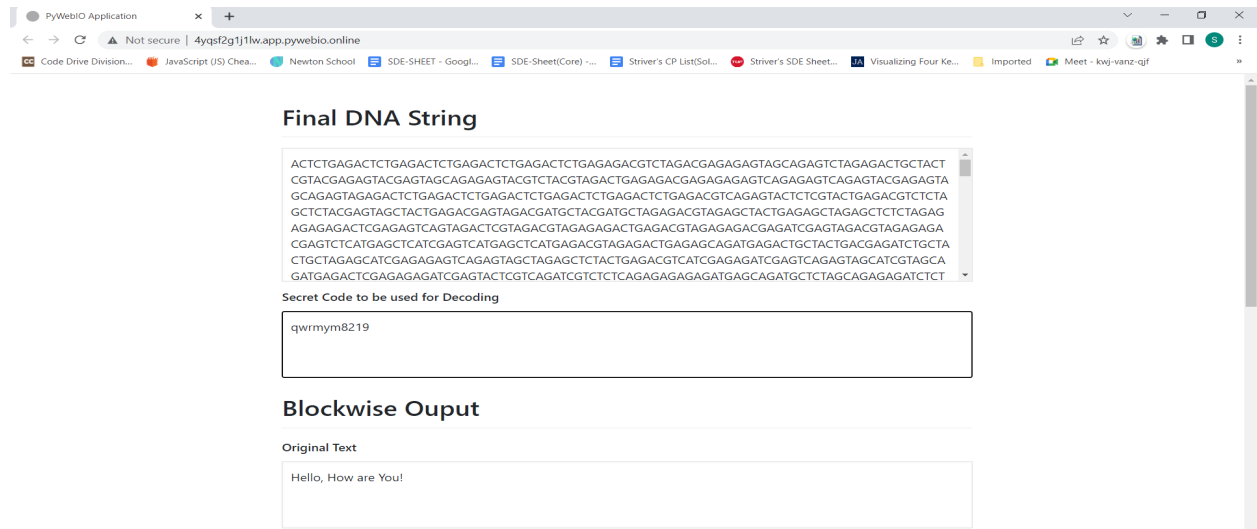

Step 3: The web application also shows the block-wise output of the input text until we get the final DNA String. As shown, the input text undergoes ASCII to binary conversion, Huffman Compression, Polar Encoding, PGP Encryption, Binary to Ternary Conversion, and Ternary to ACGT.
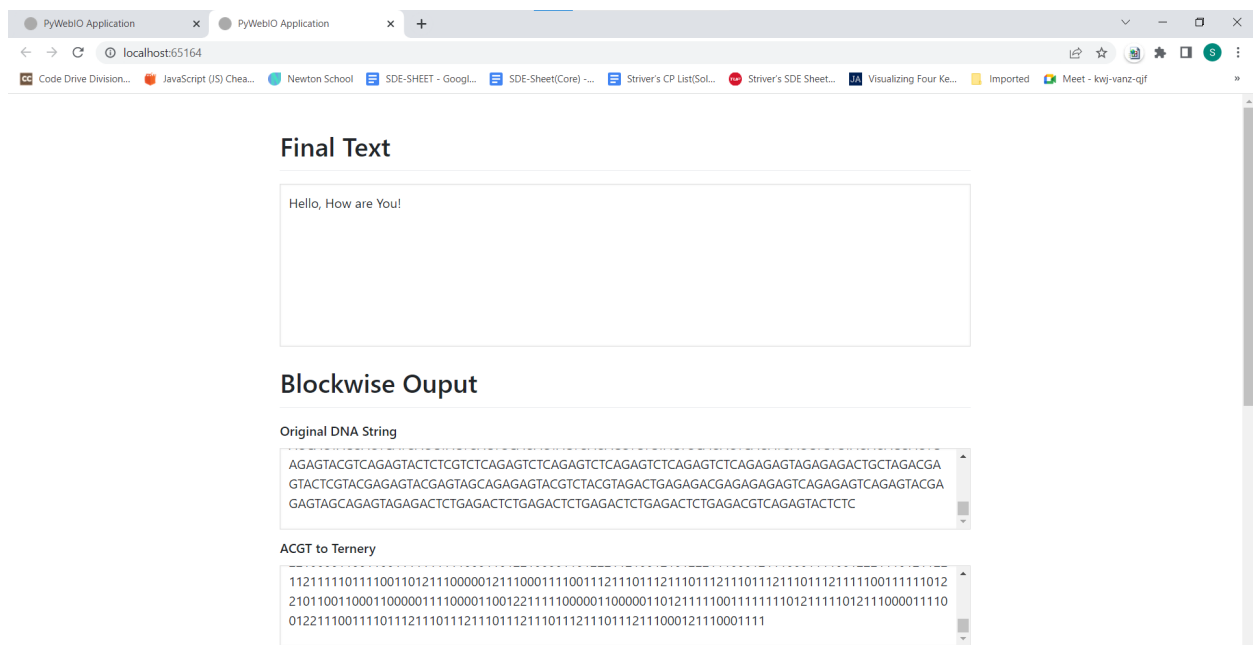
DNA Polar Codec-Decoder: This web application is used to decode the DNA string back to ASCII Text.

Step 1: Open DNA Polar Decoder using the link given. It will open the below web application. It will ask for the DNA String to be decoder. Copy-Paste the DNA String. Then enter the secret code, which is unique for the individual users Then click on submit.

Step 2: The below image shows the text which was encoded and stored in the DNA.

Step 3: The web application also shows the block-wise output of the decoder. As shown, the input text undergoes ACGT to Ternary conversion, Ternary to binary, PGP Decryption, Polar Decoding, and Huffman Decompression.

Ternery to Binary

01101010010100010011010000001101000010100010110100101101001011010010110100101101001011010010110100101010011100100010000010000001010000010001110101000000100000010011010100010101010001101010010110100000010100011101000010100101101001011010010110100101101001011010000110100001010

PGP Decryption

000000000010001000100010000000000000000000000100010000000000010001000100010000000000000000000000000010001000100010000000000010001000000000000001000100010001000010000000001000100000000010010010000000000010001000100010001000000000001000100000000000

Polar Decoding

000011111011001010110010000010101000110011000111001011101001100001

Huffman Decompression

Hello, How are You!