**CEG 4750-01: Information Security**

**Amina Haq**

**David P. Wilson**

**Jean Pauline Arcita**

**Dr. Meilin Liu**

**18th March 2021**

**Project 2 Report**

# Introduction

As an undergraduate group, our assignment for Project 2 included the following tasks:

1. Develop a program to implement DES encryption and decryption in Cipher Block Chaining (CBC) mode and with PKCS #5 padding.
2. Verify successful encryption and decryption with the supplied text test files.
3. For bonus points, verify successful encryption and decryption with the supplied binary file.
4. Examine the octal difference between two pairs of encrypted test files.
5. Demonstrate how a change of one bit in the key and input affects the ciphertext.

This report will explore our process and the results with evidence throughout each of these five tasks in order. It will conclude with a summary of functionality implemented in our program.

# Develop a program to implement DES in CBC mode.

We included snippets of our encryption, decryption, padding and depadding in this report. Crypto++ is used to implement DES.

Figure 1.1 shows our encryption function. It accepts the input block, key, xorBlock, and output block as parameters. It uses passing by reference, so changes in this function will be accessible in the main method. The xorBlock contains the data that needs to be processed through an exclusive-or (XOR) operation with the input. Encryption for CBC mode requires us to XOR input with the initial vector (IV) and then feed its output to the DES encryption method, which is “desEncryptor.ProcessBlock().”

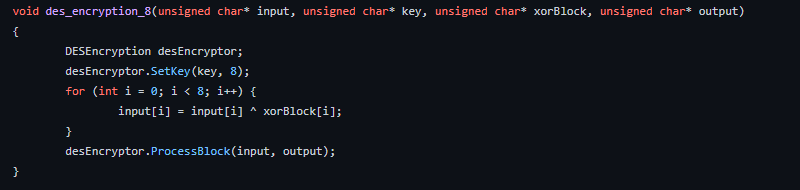


Figure .: Encryption using Cipher Block Chaining (CBC) mode.

Figure 1.2 shows our decryption function. As with the encryption function, it accepts the input block, key, xorBlock, and output block as parameters. Unlike the encryption function, the XOR operation is processed after the ProcessBlock() method is called to decrypt the input block.

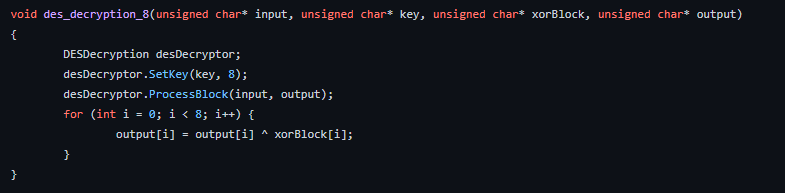


Figure .: Decryption using Cipher Block Chaining (CBC) mode.

Figure 1.3 shows the portion of our main method code that pads the input using the PKCS#5 standard. It checks the length of the input, currently contained in the “plain” string, to determine how many bytes must be added to bring the length of the input file up to the next multiple of 8. It then pads the input file with that many bytes, each of which is the value of the number of bytes added to simplify later de-padding during the decryption process.

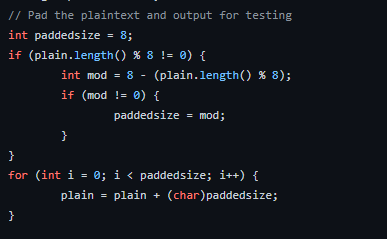


Figure .: PKCS#5 padding applied to the plaintext before encryption.

Figure 1.4 shows the code that removes padding from the input block before decryption. This process is much simpler because of the built-in substring method.

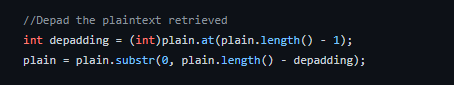


Figure .: De-padding the ciphertext before decryption.

Figure 1.5 shows the result of a successful compilation command on the project source code.

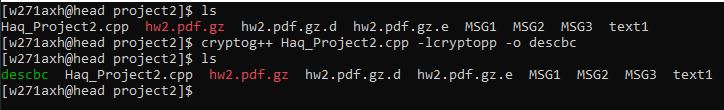


Figure . Successful compilation of the project source code.

# Verify successful encryption and decryption with text files.

The next task in our project was to perform encryption and decryption operations on a set of supplied text files and show that the resulting decrypted file was equivalent to the original files using the “diff” command. This command shows no output to the console if the supplied files are identical. Figure 2.1 shows the output of execution commands encrypting each of the four supplied text files. Figure 2.2 shows the output of execution commands decrypting those same files.

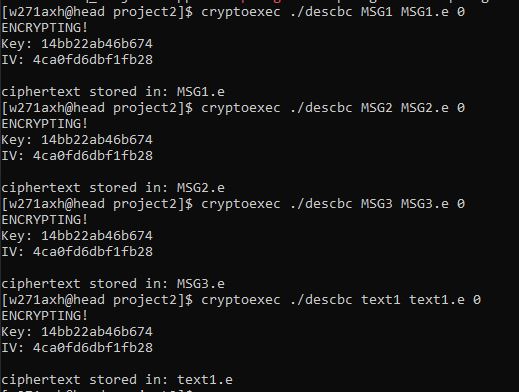


Figure .: Demonstration of successful encryption of the supplied text files.

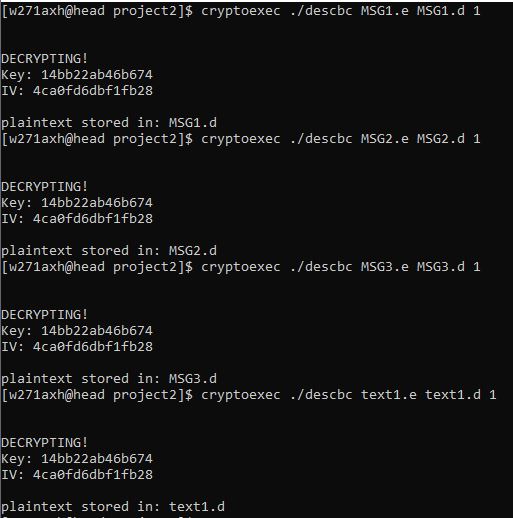
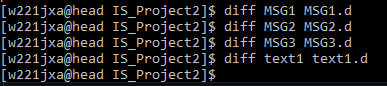


Figure .: Demonstration of successful decryption of the supplied text files.

Finally, Figure 2.3 shows the output of the diff commands used to demonstrate that the resulting plaintext files are equivalent to the original text files.



**Figure 2.3: Output of “diff” verifying matches between the original files and plaintext output.**

# For bonus points, verify successful operation with a binary file.

For bonus points, we were asked to demonstrate that our file can handle binary files as well as the supplied text files. Figure 3.1 shows successful encryption and decryption of the binary file “hw2.pdf.gz.” It also shows the output of the “diff” command which is used to verify that the plaintext output of the decryption method matches the original binary file.

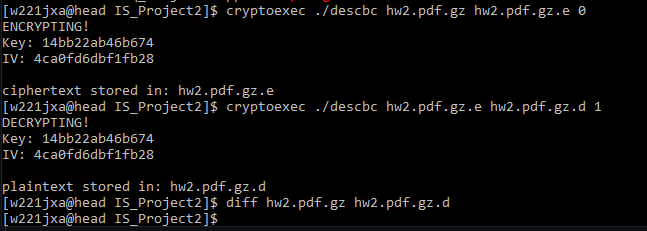


Figure .: Successful encryption, decryption, and verification of the binary file.

# Examine the octal difference between two pairs of files.

The fourth task for our project was to demonstrate the differences between two pairs of test files post-encryption. This is shown in Figure 4.1, which displays the octal difference between the very closely related MSG1 and MSG3 files using the “od -b” command.

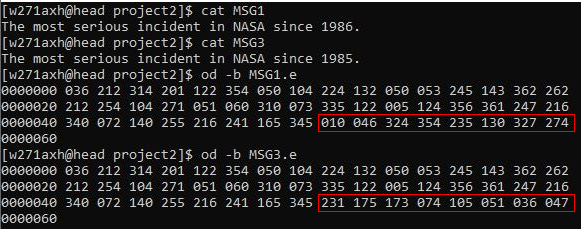


Figure .: Output of the “od -b” command to show octal differences between MSG1.e and MSG3.e.

MSG1 and MSG3 differ only in the dates given at the end of each message: “1986” versus “1985”. The result shows a difference of 8 bytes between the encrypted output versions. The bytes affected are at position 41 through 48 in the command output. This is a demonstration of the property of diffusion, which states that a small change in input to an encryption mechanism should create a large change in output. Here, the slight difference in input between MSG1 and MSG3 resulted in changes to an entire block of ciphertext.

Figure 4.2 shows the octal difference between the encrypted versions of MSG1 and MSG2. The original versions of these files differed by only two letters: the word “incident” in MSG1 becomes “accident” in MSG2. The resulting output of the “od -b” command shows a difference of 32 bytes. Thus, a 2-byte change in the input has altered not only the associated block of output but also the following three blocks, for a total difference of four altered blocks.

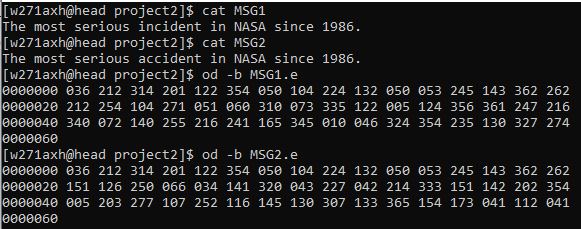
****

Figure .: Output of the “od -b” command to show byte octal differences between MSG1.e and MSG2.e.

This happens because of the XOR operation used in CBC mode. The altered block of ciphertext is processed against the following block of plaintext, which creates changes to the resulting ciphertext that are subsequently processed against the next piece of plaintext. As a result, one change within the input file alters all output that follows the change. The altered bytes represented in Figure 4.2 are at positions 17 to 48.

# Demonstrate the effects of changes in the key and input.

The fifth task in our project involved demonstrating how a change in one bit of the hardcoded key affects the output of the encryption method.

Figure 5.1 shows the successful encryption of MSG1 using the original key, “**0x140bb22ab406b674**”. The resulting ciphertext issaved in the file named MSG1.e**.**

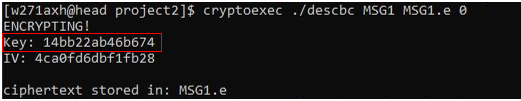


Figure .: Output of the execution command encrypting MSG1 with the default key.

Next, we adjusted a single bit in the hardcoded key to give us “**0x140bb22ab404b674”**. Figure 5.2 shows the output of the successful encryption command of MSG1 using this new key. The resulting ciphertext issaved in the file named MSG1.e1**.**

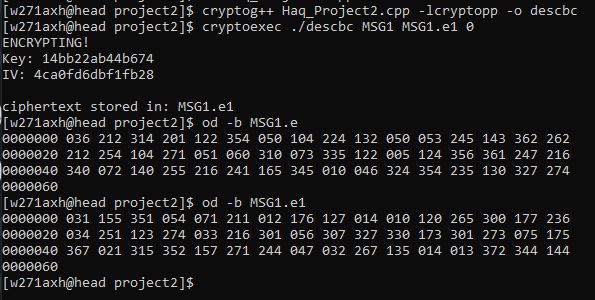


Figure .: Demonstration of encryption with a slightly altered key.

As illustrated in Figure 5.3, MSG1.e and MSG1.e1 resulted in completely different ciphertext outputs by changing one bit of the key.

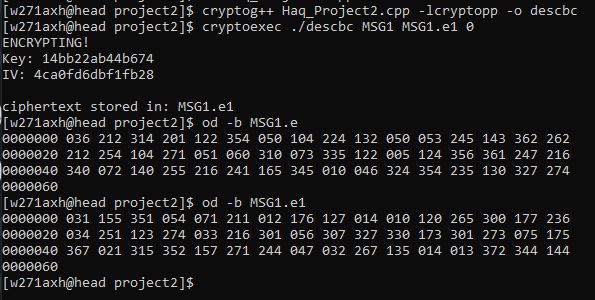


Figure .: Output of “od -b” showing the difference between the two versions of MSG1 with different keys.

The fifth task in our project also involved demonstrating how a change in one bit of the input affects the output of the encryption method.

![Text

Description automatically generated](data:image/jpeg;base64,/9j/4AAQSkZJRgABAQEAYABgAAD/4RDoRXhpZgAATU0AKgAAAAgABAE7AAIAAAAKAAAISodpAAQAAAABAAAIVJydAAEAAAAUAAAQzOocAAcAAAgMAAAAPgAAAAAc6gAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAEFtaW5hIEhhcQAABZADAAIAAAAUAAAQopAEAAIAAAAUAAAQtpKRAAIAAAADNTYAAJKSAAIAAAADNTYAAOocAAcAAAgMAAAIlgAAAAAc6gAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADIwMjE6MDM6MTEgMjA6NTU6MDcAMjAyMTowMzoxMSAyMDo1NTowNwAAAEEAbQBpAG4AYQAgAEgAYQBxAAAA/+ELHGh0dHA6Ly9ucy5hZG9iZS5jb20veGFwLzEuMC8APD94cGFja2V0IGJlZ2luPSfvu78nIGlkPSdXNU0wTXBDZWhpSHpyZVN6TlRjemtjOWQnPz4NCjx4OnhtcG1ldGEgeG1sbnM6eD0iYWRvYmU6bnM6bWV0YS8iPjxyZGY6UkRGIHhtbG5zOnJkZj0iaHR0cDovL3d3dy53My5vcmcvMTk5OS8wMi8yMi1yZGYtc3ludGF4LW5zIyI+PHJkZjpEZXNjcmlwdGlvbiByZGY6YWJvdXQ9InV1aWQ6ZmFmNWJkZDUtYmEzZC0xMWRhLWFkMzEtZDMzZDc1MTgyZjFiIiB4bWxuczpkYz0iaHR0cDovL3B1cmwub3JnL2RjL2VsZW1lbnRzLzEuMS8iLz48cmRmOkRlc2NyaXB0aW9uIHJkZjphYm91dD0idXVpZDpmYWY1YmRkNS1iYTNkLTExZGEtYWQzMS1kMzNkNzUxODJmMWIiIHhtbG5zOnhtcD0iaHR0cDovL25zLmFkb2JlLmNvbS94YXAvMS4wLyI+PHhtcDpDcmVhdGVEYXRlPjIwMjEtMDMtMTFUMjA6NTU6MDcuNTY0PC94bXA6Q3JlYXRlRGF0ZT48L3JkZjpEZXNjcmlwdGlvbj48cmRmOkRlc2NyaXB0aW9uIHJkZjphYm91dD0idXVpZDpmYWY1YmRkNS1iYTNkLTExZGEtYWQzMS1kMzNkNzUxODJmMWIiIHhtbG5zOmRjPSJodHRwOi8vcHVybC5vcmcvZGMvZWxlbWVudHMvMS4xLyI+PGRjOmNyZWF0b3I+PHJkZjpTZXEgeG1sbnM6cmRmPSJodHRwOi8vd3d3LnczLm9yZy8xOTk5LzAyLzIyLXJkZi1zeW50YXgtbnMjIj48cmRmOmxpPkFtaW5hIEhhcTwvcmRmOmxpPjwvcmRmOlNlcT4NCgkJCTwvZGM6Y3JlYXRvcj48L3JkZjpEZXNjcmlwdGlvbj48L3JkZjpSREY+PC94OnhtcG1ldGE+DQogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgIDw/eHBhY2tldCBlbmQ9J3cnPz7/2wBDAAcFBQYFBAcGBQYIBwcIChELCgkJChUPEAwRGBUaGRgVGBcbHichGx0lHRcYIi4iJSgpKywrGiAvMy8qMicqKyr/2wBDAQcICAoJChQLCxQqHBgcKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKir/wAARCABFAW0DASIAAhEBAxEB/8QAHwAAAQUBAQEBAQEAAAAAAAAAAAECAwQFBgcICQoL/8QAtRAAAgEDAwIEAwUFBAQAAAF9AQIDAAQRBRIhMUEGE1FhByJxFDKBkaEII0KxwRVS0fAkM2JyggkKFhcYGRolJicoKSo0NTY3ODk6Q0RFRkdISUpTVFVWV1hZWmNkZWZnaGlqc3R1dnd4eXqDhIWGh4iJipKTlJWWl5iZmqKjpKWmp6ipqrKztLW2t7i5usLDxMXGx8jJytLT1NXW19jZ2uHi4+Tl5ufo6erx8vP09fb3+Pn6/8QAHwEAAwEBAQEBAQEBAQAAAAAAAAECAwQFBgcICQoL/8QAtREAAgECBAQDBAcFBAQAAQJ3AAECAxEEBSExBhJBUQdhcRMiMoEIFEKRobHBCSMzUvAVYnLRChYkNOEl8RcYGRomJygpKjU2Nzg5OkNERUZHSElKU1RVVldYWVpjZGVmZ2hpanN0dXZ3eHl6goOEhYaHiImKkpOUlZaXmJmaoqOkpaanqKmqsrO0tba3uLm6wsPExcbHyMnK0tPU1dbX2Nna4uPk5ebn6Onq8vP09fb3+Pn6/9oADAMBAAIRAxEAPwDxKPQ2udIvNXlvrW2ghuDCqSiQvK5UsFXahHQHliB71j100n/JObr/ALDS/wDop66LQ/7Cvrbw3carqFrFdwokaGScL5AhneRt4zxuQqFz1PSn1fy/K4k/dXz/ADOMs/DWq3+nNfWtujwhXcKZ41kdUGWKRlg7gdyoI4Poal0zwpqmsRxHTvsMrTZ2QnUbdJTjOf3bOG7HtXRaFbiK1vPElvd6fJq1480drbzalBCbYPkNK4kcEnDEKuPc9s4mjy2+keHtR1IzxHUJwbK0iSQF4ww/eykdQNvyA995x0qdbfL8f6sVbX5mfBoGqXOj3Oqw2bmwtcebOSFX7wXjJ+bBZc7c4yM9azq7TwxbzXHhLXI5r+xT7TZpBaRXOpQRtkXCOyhXcFRwx5AB/GtvwHcWNhp2mm51gJbzSyi+gOqQ28KA/KFlgKl59w79ACBkYJDYunzPMKu3elzWem2F7K0Zjvkd4gpO4BXKnPHqO2a7fw5qkVpoNvbXWp2aanJ5/wDY87Shv7OypB3tuxGHPCg/dOX4B5fofiE2K+EtOOqQw2heZNSRZkCsplf5ZWB5Ug5wTjnI65ofYNlc5PTvDE+oWkM8l7ZWP2pzHaJdOytcsODt2qQBnA3MVXPfg4qaho11plnZ3F1tUXYkKx87kKOUYMCODkH1r0uwj0tLG0EzaSpexVFa+khDoPsymMx+Ycr++eUllxymCegMI8XQya7oSWupxwaZdXl097H5ioDG9w5Cy/7JVs7W45zRLR2QfZuzyqivTfDusWVn4Y0wWCiXyTMNQszrdvZR3BLH/WxypmZShUAgnGCODyX+BbnT7Kx055dW8q0nml+22zarDbwxqTtCSwMhefcO/QA4yMEgfUDzzSNMm1nWLXTrVo0muZBGjSEhQT64BP6VTI2sQexr03wjqAtf+Edex1610vToXkOqRNerC0svmHG9MgyKUKAHBUYOSOa8zfmRsepo62DuNor1DQ769sPDnhWX+07ey0dPOfUI3uY0aeMTPuQxk75QVJAUAjLVjR+L7nQ/C+hjQ7mKNlu7iW4twQSyb1KxyYO4oRn5c4P4UdbB0OIq5p2n/wBoyTp9rtbXyYHmzdS7A+0Z2Lxyx7DvXd6FqbLbaHJYatZafpMW86zZvdJF5p8xi+6EndMGjKqoAbpjjFZfhHWr832oadBf3i6V/Z98y2ZnbygPJkIyucdcdutD0v8AP8P60Gt18jjKK9M8N6xZ2fhXSxYr5pi84ajZtrdvZR3DFjxLHKmZVKEAEE4wRweTk2t3dnwbZxeFtWi05w851GH+0EtJJCT8mSzKZF2cADODngZ5HpcS1OS+wXP9l/2j5f8AovneR5m4ff27sY69O/Srln4a1W/05r61t0eEK7hTPGsjqgyxSMsHcDuVBHB9DXR6PrmsXHgF9O03xDJaXNteBhFLqYtv3BjIwpd1BG4fdB7jimeFdPXT9Fk1y2vNOk1WZZILS3l1K3gNsCCrSuHcEnBIVce57ZHpf+un+f8AWgLoc/pmhtqun3txBfWsctnC0720gk8x0XGWUhCvfoWBqfTfCOqanpM+pRC2gtIY2kEl1cpD5gDBTtDEZ5YDPTPGc8VP4RGP7eH/AFB7j+a11fhNkuvAM8HihtPbR96QRz/bIkuLeMl5GxhtxIZQwjZSTngYyQP9P1aBfr+iZ5jRTnCh2CElc8EjBIrsrK7vR4JsofDOrw2EqtMdSiF+lpJKSfkJLMpkXZwAM4OeOeTpcOtji6s/YLn+y/7R8v8A0XzvI8zcPv7d2MdenfpXovgK4sbHTdNa41jZbTSyi+t21SG2hQH5QssDKXn3Dv0AOMjBIytK1zV7jwJLp2l+IXtLm2vdwik1MW3+jmMjCF3UEbh90HuOKHon/XX+vzBas4ate18LazeNpotrJnOq7/sfzqPN2HDdT8uMd8etZFeh2PimDTF8OWI+zyosVsxnEw/0U+e5lB9CyEA5xgVSV/vJbsclD4Z1OazN0UtoIdzKrXV5DB5hXhtgdwXweMrnnijT/DOq6nZrd20ESwO/lxvPcxw+a/dU3sN56cLnqPWustPKvnaz8QnR7jQY7icxXQ1GJLq0QsxLRKr725+YIyNnsBnNO09NK1tvDjzNpc9haQixvbbUL4WrQATFjMo8xC2VbPG7nIIzioWq/r+v63Llo2cZBoGqXOj3OqxWcn2G1x5s7EKo+YLxn72Cyg4zjIzjNZ1dxoNs0/hzxDENQsUiuLYQWMVzqcMbcXKuVCu4KjAY8gA/jXEEYOKAtv6iUUUUxBRRRQAUUUUAFFFFABRRRQAUUUUAddp2n+IpdBvo9PfSm0yWXfMLq5ssxscoG/etujPUA8H0rn73SZ7DT7G7meJo71XaMI2SNjlDnt1HYnitWyuII/DHiaGSaNJZpLfy42YBnxIxOB3xXReH/Ef2ODwhp41OKCyYyrqMfmqoKmVvllP93ac4bjnND7i2R51RXpvh3WLKz8MaYLBRL5JmGoWZ1u3so7glj/rY5UzMpQqAQTjBHB5PmjlS7FF2qTwCc4H1o62GNor1rw94qjsNG0q2TV7eBIrazJTzkUo5vGEnuD5Z57hT6Gq1vqSR6hYPpGtWVnokNxP/AGtbNdognHnMWLRZzOGiKquA3pxTej+b/D9BJ3V/T8Ty6rP2C5/sv+0fL/0XzvI8zcPv7d2MdenfpXc6Be+Z4dksjfto2nGS4kW6s9Zihk2sOBNbbt82NoAA2nBOM1V0fXNYuPAL6dpviGS0uba8DCKXUxbfuDGRhS7qCNw+6D3HFS9m/Qrrb1ObTxFqSaSNO82J7dUaNDJbRvJGrfeVZCpdQcngEDk+prLorvvDF5I3hQWNxqJ0izzM5u7LWYoXOVx++tt2+YZUAAbTgnGab2bF1SOBor0zw3rFnZ+FdLFivmmLzhqNm2t29lHcMWPEscqZlUoQAQTjBHB5ORD4uutC8K6Eui3MUbpdXElxbhgWddylY5MYYoRn5eAfw4Otg6XOWttP+06beXn2u1h+yBD5Esu2Sbccfu1x82Op9BVOu20X7beeBNbtJNSs4oLry3tbKbVIYgHEoLkRPINvA7gZ7Zq/4e1ForHQWsNYtLHSYA/9s2st0kZmO9i++EndMGjKqMBvTjFAHBz39zc2drazybobRWWFdoGwMxY8jk8k9arV6RoMlhcXHhW+TUbC0tdMuJhOlzdIkkYMxZPkJ3MCGHIBA5yQATVbw3eSN4YNjcaidIs907m8stZihdsrj97bbt8wyoAA2nBOM0ujY+tjgK37DUNRPhjUIre/02zghjWOSPyoo7q5R25VXCb3HdgWxj24rArtNBS9uPAGs2UmqWiwXCxNa2lxqsMfzrKC5EbuNpwOpAz2zT6C6nF0V6L4f8R/Y4PCGnjVI4LJjKuoxCZVUqZW+WX/AGdp4Dcc571n2t1eDwZZweF9XhsJFec6lEL9LSSU5+QksymRdnAAzg5455H1BbnLW2n/AGnTby8+12sP2QIfIll2yTbjj92uPmx1PoKXSNMm1nWLXTrVo0muZBGjSEhQT64BP6V0+gpe3HgDWbKTVLRYLhYmtbS41WGP51lBciN3G04HUgZ7ZrZ8HagLVPDb2WvWul6fCznVImvVhaWXzDjemQZFKlADgqMHJHNAuhwdnrd9ptjdWVo0CR3StHMxto2kZTgFRIV3AcDgEVSE8wtzbiV/JZw5j3HaWAIBx0zgnn3r0rw9rFnaeGdN+wgTGIzDULM63b2UdwxY/wCtjlTMylCoBBOMEcHk19C8SLaR+ErCPUktrB2mW/h85VXY0rfLMeMrtPRuOc45oY3ocF9guf7L/tHy/wDRfO8jzNw+/t3Yx16d+lVq7nSdb1efwJJpul+IZLW4tr3csUmqC2/0cxkYQu6gjcPug9xxXDUdWv62DoXLbT/tOm3l59rtYfsgQ+RLLtkm3HH7tcfNjqfQVTrtNBS9uPAGs2UmqWiwXCxNa2lxqsMfzrKC5EbuNpwOpAz2zWj4f8R/Y4PCGnjVI4LJjKuoxCZVUqZW+WX/AGdp4Dcc570MV9LnnVao8Nau0OlyizJj1Z/Lsm3riVt23HX5ef72KzGwHOOmeK9K8Patpz3HhXT72+tYoYoIrgyySqBbzRXUr4Yk/LujZhg/3lPpTSTXz/zCV1c4SHQdSn069v4rbdbWLBbh96jYSccDOW98Zx3p9r4d1G709b5Vtobd93lvdXkMHmbeuwSMpbHTgHnjrXc6dqHh21Gl6beatIi3f2lrsQwxyQ5uCYwXk8wbSqqh+6cVmaLEs+nwad4nOj3Gi27ShLoajCt1aLltzRqr73+b5grIwPYDOanW39fMp2T/AK26HKW2i6heaTd6lbW++0syBNJvUbcnAwCcnqM4BxnmqFej6Je+HLKx0XSrvVpUW5jnN2sdujxZuMxgySeYChVVQ/dOK88mi8m4kiLK+xiu5GDKcHqCOopve39eYun9fIjq5baf9p028vPtdrD9kCHyJZdsk244/drj5sdT6Cuy8MXkjeFBY3GonSLPMzm7stZihc5XH7623b5hlQABtOCcZqroKXtx4A1myk1S0WC4WJrW0uNVhj+dZQXIjdxtOB1IGe2aHoBxdFei+H/Ef2ODwhp41SOCyYyrqMQmVVKmVvll/wBnaeA3HOe9Z9rdXg8GWcHhfV4bCRXnOpRC/S0klOfkJLMpkXZwAM4OeOeR9QW5xVFemeG9Ys7PwrpYsV80xecNRs21u3so7hix4ljlTMqlCACCcYI4PJ81cqXYou1SeATnA+tD0dgW1y/b6Dqd1o1zq0Nm5sLXHmzsQq/eC8ZPzYLLnGcZGcZqWy8MatqFgLy0tlaJg5jVp40kmCDLGONmDSY/2Qehre8MW81x4S1yOa/sU+02aQWkVzqUEbZFwjsoV3BUcMeQAfxq74Z1Wyhg0fVNbt7fGiblhlTU41Z0DlgptgDIzbmYBsqvILcAkjDp/Xl/wTltP8K6xqlnHc2dvGyTFhCslzFHJPt+95aMwZ8dPlB5461DZaDqF9ZPdxRxR2yMV865uI4FZgMlVMjLuYDsuSMj1Fd34avbEaTobyXVgy28k7T3NzdxRXGl5Y48mNuX4O/lZMk/KEbmotIvrOfQ9AiefRpNOtGmTVUv1h8/YZS5KB8vko3Bi5yME8DAwPN6K0YdMS7sdRvob20gjsypW3uJts04ZsDy1x8xHU+grOoGzYTQ2udIvNXlvrW2ghuDCqSiQvLIVLBV2oR0B5Yge9Y9dNJ/yTm6/wCw0v8A6Keui0P+wr628N3Gq6haxXcKJGhknC+QIZ3kbeM8bkKhc9T0p9X8vyuSn7q+f5nGWfhrVb/TmvrW3R4QruFM8ayOqDLFIywdwO5UEcH0NS6Z4U1TWI4jp32GVps7ITqNukpxnP7tnDdj2rotCtxFa3niS3u9Pk1a8eaO1t5tSghNsHyGlcSOCThiFXHue2cTR5bfSPD2o6kZ4jqE4NlaRJIC8YYfvZSOoG35Ae+846VOtvl+P9WKtr8zPg0DVLnR7nVYbNzYWuPNnJCr94Lxk/NgsuducZGetZ1dp4Yt5rjwlrkc1/Yp9ps0gtIrnUoI2yLhHZQruCo4Y8gA/jW34DuLGw07TTc6wEt5pZRfQHVIbeFAflCywFS8+4d+gBAyMEhsXT5nmFXbvS5rPTbC9laMx3yO8QUncArlTnj1HbNdv4c1SK00G3trrU7NNTk8/wDsedpQ39nZUg723YjDnhQfunL8A8v0PxCbFfCWnHVIYbQvMmpIsyBWUyv8srA8qQc4Jxzkdc0PsGyucnp3hifULSGeS9srH7U5jtEunZWuWHB27VIAzgbmKrnvwcVNQ0a60yzs7i62qLsSFY+dyFHKMGBHByD616XYR6WljaCZtJUvYqitfSQh0H2ZTGY/MOV/fPKSy45TBPQGEeLoZNd0JLXU44NMury6e9j8xUBje4chZf8AZKtna3HOaJaOyD7N2eVUV6b4d1iys/DGmCwUS+SZhqFmdbt7KO4JY/62OVMzKUKgEE4wRweS/wAC3On2Vjpzy6t5VpPNL9ttm1WG3hjUnaElgZC8+4d+gBxkYJA+oHnmkaZNrOsWunWrRpNcyCNGkJCgn1wCf0qmRtYg9jXpvhHUBa/8I69jr1rpenQvIdUia9WFpZfMON6ZBkUoUAOCowckc15m/MjY9TR1sHcbRXqGh317YeHPCsv9p29lo6ec+oRvcxo08YmfchjJ3ygqSAoBGWrGj8X3Oh+F9DGh3MUbLd3Etxbgglk3qVjkwdxQjPy5wfwo62DocRVzTtP/ALRknT7Xa2vkwPNm6l2B9ozsXjlj2Heu70LU2W20OSw1ay0/SYt51mze6SLzT5jF90JO6YNGVVQA3THGKy/COtX5vtQ06C/vF0r+z75lszO3lAeTIRlc4647daHpf5/h/Wg1uvkcZRXpnhvWLOz8K6WLFfNMXnDUbNtbt7KO4YseJY5UzKpQgAgnGCODycm1u7s+DbOLwtq0WnOHnOow/wBoJaSSEn5MlmUyLs4AGcHPAzyPS4lqcl9guf7L/tHy/wDRfO8jzNw+/t3Yx16d+lXLPw1qt/pzX1rbo8IV3CmeNZHVBlikZYO4HcqCOD6Guj0fXNYuPAL6dpviGS0uba8DCKXUxbfuDGRhS7qCNw+6D3HFM8K6eun6LJrlteadJqsyyQWlvLqVvAbYEFWlcO4JOCQq49z2yPS/9dP8/wCtAXQ5/TNDbVdPvbiC+tY5bOFp3tpBJ5jouMspCFe/QsDU+m+EdU1PSZ9SiFtBaQxtIJLq5SHzAGCnaGIzywGemeM54qfwiMf28P8AqD3H81rq/CbJdeAZ4PFDae2j70gjn+2RJcW8ZLyNjDbiQyhhGyknPAxkgf6fq0C/X9EzzGinOFDsEJK54JGCRXZWV3ejwTZQ+GdXhsJVaY6lEL9LSSUk/ISWZTIuzgAZwc8c8nS4dbHF1Z+wXP8AZf8AaPl/6L53keZuH39u7GOvTv0r0XwFcWNjpumtcaxstppZRfW7apDbQoD8oWWBlLz7h36AHGRgkZWla5q9x4El07S/EL2lzbXu4RSamLb/AEcxkYQu6gjcPug9xxQ9E/66/wBfmC1Zw1a9r4W1m8bTRbWTOdV3/Y/nUebsOG6n5cY749ayK9DsfFMGmL4csR9nlRYrZjOJh/op89zKD6FkIBzjAqkr/eS3Y5KHwzqc1mbopbQQ7mVWuryGDzCvDbA7gvg8ZXPPFGn+GdV1OzW7toIlgd/Ljee5jh81+6pvYbz04XPUetdZaeVfO1n4hOj3Ggx3E5iuhqMSXVohZiWiVX3tz8wRkbPYDOadp6aVrbeHHmbS57C0hFje22oXwtWgAmLGZR5iFsq2eN3OQRnFQtV/X9f1uXLRs4vTtC1LVobyXT7VpY7GIzXDFlURqASepGTgHgc8Hjis+vR9B1jw1FYPpseo3llEtneNOrWsZSaV42UEOZgWIXCqpAyc8jdXnThRIwjJZM/KWGCR9OcUX1+QW0+Y2iiimIKKKKACiiigAooooAKKKKACiiigDrdNsPEU2g3qae+lNpksm+YXVzZZjY5QN+9bdGeoB4PpWBe6TPYafY3czxNHeq7RhGyRscoc9uo7E8VqWFxDH4W8SQyTRpLM9v5cbMAz4kJOB3xXR+H/ABH9jg8IaeNTigsmMq6jH5qqCplb5ZT/AHdpzhuOc0PuLZHnVFem+HdYsrPwxpgsFEvkmYahZnW7eyjuCWP+tjlTMylCoBBOMEcHk+aOVLsUXapPAJzgfWjrYY2ivWvD3iqOw0bSrZNXt4EitrMlPORSjm8YSe4PlnnuFPoarW+pJHqFg+ka1ZWeiQ3E/wDa1s12iCcecxYtFnM4aIqq4DenFN6P5v8AD9BJ3V/T8Ty6rP2C5/sv+0fL/wBF87yPM3D7+3djHXp36V3OgXvmeHZLI37aNpxkuJFurPWYoZNrDgTW27fNjaAANpwTjNVdH1zWLjwC+nab4hktLm2vAwil1MW37gxkYUu6gjcPug9xxUvZv0K629Tm08RakmkjTvNie3VGjQyW0byRq33lWQqXUHJ4BA5Pqay6K77wxeSN4UFjcaidIs8zObuy1mKFzlcfvrbdvmGVAAG04Jxmm9mxdUjgaK9M8N6xZ2fhXSxYr5pi84ajZtrdvZR3DFjxLHKmZVKEAEE4wRweTkQ+LrrQvCuhLotzFG6XVxJcW4YFnXcpWOTGGKEZ+XgH8ODrYOlzlrbT/tOm3l59rtYfsgQ+RLLtkm3HH7tcfNjqfQVTrttF+23ngTW7STUrOKC68t7Wym1SGIBxKC5ETyDbwO4Ge2av+HtRaKx0FrDWLSx0mAP/AGzay3SRmY72L74Sd0waMqowG9OMUAcHPf3NzZ2trPJuhtFZYV2gbAzFjyOTyT1qtXpGgyWFxceFb5NRsLS10y4mE6XN0iSRgzFk+QncwIYcgEDnJABNVvDd5I3hg2NxqJ0iz3Tubyy1mKF2yuP3ttu3zDKgADacE4zS6Nj62OArfsNQ1E+GNQit7/TbOCGNY5I/KijurlHblVcJvcd2BbGPbisCu00FL248AazZSapaLBcLE1raXGqwx/OsoLkRu42nA6kDPbNPoLqcXRXovh/xH9jg8IaeNUjgsmMq6jEJlVSplb5Zf9naeA3HOe9Z9rdXg8GWcHhfV4bCRXnOpRC/S0klOfkJLMpkXZwAM4OeOeR9QW5y1tp/2nTby8+12sP2QIfIll2yTbjj92uPmx1PoKXSNMm1nWLXTrVo0muZBGjSEhQT64BP6V0+gpe3HgDWbKTVLRYLhYmtbS41WGP51lBciN3G04HUgZ7ZrZ8HagLVPDb2WvWul6fCznVImvVhaWXzDjemQZFKlADgqMHJHNAuhwdnrd9ptjdWVo0CR3StHMxto2kZTgFRIV3AcDgEVSE8wtzbiV/JZw5j3HaWAIBx0zgnn3r0rw9rFnaeGdN+wgTGIzDULM63b2UdwxY/62OVMzKUKgEE4wRweTX0LxItpH4SsI9SS2sHaZb+HzlVdjSt8sx4yu09G45zjmhjehwX2C5/sv8AtHy/9F87yPM3D7+3djHXp36VWrudJ1vV5/Akmm6X4hktbi2vdyxSaoLb/RzGRhC7qCNw+6D3HFcNR1a/rYOhcttP+06beXn2u1h+yBD5Esu2Sbccfu1x82Op9BVOu00FL248AazZSapaLBcLE1raXGqwx/OsoLkRu42nA6kDPbNaPh/xH9jg8IaeNUjgsmMq6jEJlVSplb5Zf9naeA3HOe9DFfS551WqPDWrtDpcosyY9Wfy7Jt64lbdtx1+Xn+9isxsBzjpnivSvD2rac9x4V0+9vrWKGKCK4MskqgW80V1K+GJPy7o2YYP95T6U0k18/8AMJXVzhIdB1KfTr2/itt1tYsFuH3qNhJxwM5b3xnHen2vh3UbvT1vlW2ht33eW91eQweZt67BIylsdOAeeOtdzp2oeHbUaXpt5q0iLd/aWuxDDHJDm4JjBeTzBtKqqH7pxWZosSz6fBp3ic6PcaLbtKEuhqMK3VouW3NGqvvf5vmCsjA9gM5qdbf18ynZP+tuhyltouoXmk3epW1vvtLMgTSb1G3JwMAnJ6jOAcZ5qhXo+iXvhyysdF0q71aVFuY5zdrHbo8WbjMYMknmAoVVUP3TivPJovJuJIiyvsYruRgynB6gjqKb3t/XmLp/XyI6uW2n/adNvLz7Xaw/ZAh8iWXbJNuOP3a4+bHU+grsvDF5I3hQWNxqJ0izzM5u7LWYoXOVx++tt2+YZUAAbTgnGaq6Cl7ceANZspNUtFguFia1tLjVYY/nWUFyI3cbTgdSBntmh6AcXRXovh/xH9jg8IaeNUjgsmMq6jEJlVSplb5Zf9naeA3HOe9Z9rdXg8GWcHhfV4bCRXnOpRC/S0klOfkJLMpkXZwAM4OeOeR9QW5xVFemeG9Ys7PwrpYsV80xecNRs21u3so7hix4ljlTMqlCACCcYI4PJ81cqXYou1SeATnA+tD0dgW1y/b6Dqd1o1zq0Nm5sLXHmzsQq/eC8ZPzYLLnGcZGcZqWy8MatqFgLy0tlaJg5jVp40kmCDLGONmDSY/2Qehre8MW81x4S1yOa/sU+02aQWkVzqUEbZFwjsoV3BUcMeQAfxq74Z1Wyhg0fVNbt7fGiblhlTU41Z0DlgptgDIzbmYBsqvILcAkjDp/Xl/wTltP8K6xqlnHc2dvGyTFhCslzFHJPt+95aMwZ8dPlB5461X03Q9S1eG8l0+2MsdlEZrhtyqEUAnuRk4BOBzweOK73w1e2I0nQ3kurBlt5J2nubm7iiuNLyxx5Mbcvwd/KyZJ+UI3NV/Dms+HI9K/s06ne2irZXbXO+0j2zzPGy7gxmBJC4CqQOSeRuoel/QOq9f1POqK0LfS1utO1C9jv7SJLPZthuJNk1wGbH7tOckdTzwPWs+gCSf/AI+JP98/zqOiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooA/9k=)Figure 5.4: Illustrates difference between the text contained in the files MSG1 and MSG4 shows that the difference between MSG1 and MSG4 is simply that “1986” is changed to “1984” i.e., a difference of one bit.

Figure .: Illustrates difference between the text contained in the files MSG1 and MSG4.

![Text

Description automatically generated](data:image/jpeg;base64,/9j/4AAQSkZJRgABAQEAYABgAAD/4RDoRXhpZgAATU0AKgAAAAgABAE7AAIAAAAKAAAISodpAAQAAAABAAAIVJydAAEAAAAUAAAQzOocAAcAAAgMAAAAPgAAAAAc6gAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAEFtaW5hIEhhcQAABZADAAIAAAAUAAAQopAEAAIAAAAUAAAQtpKRAAIAAAADMTcAAJKSAAIAAAADMTcAAOocAAcAAAgMAAAIlgAAAAAc6gAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADIwMjE6MDM6MTEgMjA6NTU6MjcAMjAyMTowMzoxMSAyMDo1NToyNwAAAEEAbQBpAG4AYQAgAEgAYQBxAAAA/+ELHGh0dHA6Ly9ucy5hZG9iZS5jb20veGFwLzEuMC8APD94cGFja2V0IGJlZ2luPSfvu78nIGlkPSdXNU0wTXBDZWhpSHpyZVN6TlRjemtjOWQnPz4NCjx4OnhtcG1ldGEgeG1sbnM6eD0iYWRvYmU6bnM6bWV0YS8iPjxyZGY6UkRGIHhtbG5zOnJkZj0iaHR0cDovL3d3dy53My5vcmcvMTk5OS8wMi8yMi1yZGYtc3ludGF4LW5zIyI+PHJkZjpEZXNjcmlwdGlvbiByZGY6YWJvdXQ9InV1aWQ6ZmFmNWJkZDUtYmEzZC0xMWRhLWFkMzEtZDMzZDc1MTgyZjFiIiB4bWxuczpkYz0iaHR0cDovL3B1cmwub3JnL2RjL2VsZW1lbnRzLzEuMS8iLz48cmRmOkRlc2NyaXB0aW9uIHJkZjphYm91dD0idXVpZDpmYWY1YmRkNS1iYTNkLTExZGEtYWQzMS1kMzNkNzUxODJmMWIiIHhtbG5zOnhtcD0iaHR0cDovL25zLmFkb2JlLmNvbS94YXAvMS4wLyI+PHhtcDpDcmVhdGVEYXRlPjIwMjEtMDMtMTFUMjA6NTU6MjcuMTY2PC94bXA6Q3JlYXRlRGF0ZT48L3JkZjpEZXNjcmlwdGlvbj48cmRmOkRlc2NyaXB0aW9uIHJkZjphYm91dD0idXVpZDpmYWY1YmRkNS1iYTNkLTExZGEtYWQzMS1kMzNkNzUxODJmMWIiIHhtbG5zOmRjPSJodHRwOi8vcHVybC5vcmcvZGMvZWxlbWVudHMvMS4xLyI+PGRjOmNyZWF0b3I+PHJkZjpTZXEgeG1sbnM6cmRmPSJodHRwOi8vd3d3LnczLm9yZy8xOTk5LzAyLzIyLXJkZi1zeW50YXgtbnMjIj48cmRmOmxpPkFtaW5hIEhhcTwvcmRmOmxpPjwvcmRmOlNlcT4NCgkJCTwvZGM6Y3JlYXRvcj48L3JkZjpEZXNjcmlwdGlvbj48L3JkZjpSREY+PC94OnhtcG1ldGE+DQogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgIDw/eHBhY2tldCBlbmQ9J3cnPz7/2wBDAAcFBQYFBAcGBQYIBwcIChELCgkJChUPEAwRGBUaGRgVGBcbHichGx0lHRcYIi4iJSgpKywrGiAvMy8qMicqKyr/2wBDAQcICAoJChQLCxQqHBgcKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKir/wAARCADFAeYDASIAAhEBAxEB/8QAHwAAAQUBAQEBAQEAAAAAAAAAAAECAwQFBgcICQoL/8QAtRAAAgEDAwIEAwUFBAQAAAF9AQIDAAQRBRIhMUEGE1FhByJxFDKBkaEII0KxwRVS0fAkM2JyggkKFhcYGRolJicoKSo0NTY3ODk6Q0RFRkdISUpTVFVWV1hZWmNkZWZnaGlqc3R1dnd4eXqDhIWGh4iJipKTlJWWl5iZmqKjpKWmp6ipqrKztLW2t7i5usLDxMXGx8jJytLT1NXW19jZ2uHi4+Tl5ufo6erx8vP09fb3+Pn6/8QAHwEAAwEBAQEBAQEBAQAAAAAAAAECAwQFBgcICQoL/8QAtREAAgECBAQDBAcFBAQAAQJ3AAECAxEEBSExBhJBUQdhcRMiMoEIFEKRobHBCSMzUvAVYnLRChYkNOEl8RcYGRomJygpKjU2Nzg5OkNERUZHSElKU1RVVldYWVpjZGVmZ2hpanN0dXZ3eHl6goOEhYaHiImKkpOUlZaXmJmaoqOkpaanqKmqsrO0tba3uLm6wsPExcbHyMnK0tPU1dbX2Nna4uPk5ebn6Onq8vP09fb3+Pn6/9oADAMBAAIRAxEAPwDxKPQ2udIvNXlvrW2ghuDCqSiQvK5UsFXahHQHliB71j100n/JObr/ALDS/wDop66LQ/7Cvrbw3carqFrFdwokaGScL5AhneRt4zxuQqFz1PSn1fy/K4k/dXz/ADOMs/DWq3+nNfWtujwhXcKZ41kdUGWKRlg7gdyoI4Poal0zwpqmsRxHTvsMrTZ2QnUbdJTjOf3bOG7HtXRaFbiK1vPElvd6fJq1480drbzalBCbYPkNK4kcEnDEKuPc9s4mjy2+keHtR1IzxHUJwbK0iSQF4ww/eykdQNvyA995x0qdbfL8f6sVbX5mfBoGqXOj3Oqw2bmwtcebOSFX7wXjJ+bBZc7c4yM9azq7TwxbzXHhLXI5r+xT7TZpBaRXOpQRtkXCOyhXcFRwx5AB/GtvwHcWNhp2mm51gJbzSyi+gOqQ28KA/KFlgKl59w79ACBkYJDYunzPMKu3elzWem2F7K0Zjvkd4gpO4BXKnPHqO2a7fw5qkVpoNvbXWp2aanJ5/wDY87Shv7OypB3tuxGHPCg/dOX4B5fofiE2K+EtOOqQw2heZNSRZkCsplf5ZWB5Ug5wTjnI65ofYNlc5PTvDE+oWkM8l7ZWP2pzHaJdOytcsODt2qQBnA3MVXPfg4qaho11plnZ3F1tUXYkKx87kKOUYMCODkH1r0uwj0tLG0EzaSpexVFa+khDoPsymMx+Ycr++eUllxymCegMI8XQya7oSWupxwaZdXl097H5ioDG9w5Cy/7JVs7W45zRLR2QfZuzyqivTfDusWVn4Y0wWCiXyTMNQszrdvZR3BLH/WxypmZShUAgnGCODyX+BbnT7Kx055dW8q0nml+22zarDbwxqTtCSwMhefcO/QA4yMEgfUDzzSNMm1nWLXTrVo0muZBGjSEhQT64BP6VTI2sQexr03wjqAtf+Edex1610vToXkOqRNerC0svmHG9MgyKUKAHBUYOSOa8zfmRsepo62DuNor1DQ769sPDnhWX+07ey0dPOfUI3uY0aeMTPuQxk75QVJAUAjLVjR+L7nQ/C+hjQ7mKNlu7iW4twQSyb1KxyYO4oRn5c4P4UdbB0OIq5p2n/wBoyTp9rtbXyYHmzdS7A+0Z2Lxyx7DvXd6FqbLbaHJYatZafpMW86zZvdJF5p8xi+6EndMGjKqoAbpjjFZfhHWr832oadBf3i6V/Z98y2ZnbygPJkIyucdcdutD0v8AP8P60Gt18jjKK9M8N6xZ2fhXSxYr5pi84ajZtrdvZR3DFjxLHKmZVKEAEE4wRweTk2t3dnwbZxeFtWi05w851GH+0EtJJCT8mSzKZF2cADODngZ5HpcS1OS+wXP9l/2j5f8AovneR5m4ff27sY69O/Srln4a1W/05r61t0eEK7hTPGsjqgyxSMsHcDuVBHB9DXR6PrmsXHgF9O03xDJaXNteBhFLqYtv3BjIwpd1BG4fdB7jimeFdPXT9Fk1y2vNOk1WZZILS3l1K3gNsCCrSuHcEnBIVce57ZHpf+un+f8AWgLoc/pmhtqun3txBfWsctnC0720gk8x0XGWUhCvfoWBqfTfCOqanpM+pRC2gtIY2kEl1cpD5gDBTtDEZ5YDPTPGc8VP4RGP7eH/AFB7j+a11fhNkuvAM8HihtPbR96QRz/bIkuLeMl5GxhtxIZQwjZSTngYyQP9P1aBfr+iZ5jRTnCh2CElc8EjBIrsrK7vR4JsofDOrw2EqtMdSiF+lpJKSfkJLMpkXZwAM4OeOeTpcOtji6K7S28W3egeEdATR7uJZY7meS5hBGZFDLtSTB3bD83y5wfwq1oWpxSeGRrNwUW68NySfZ0C4DednygP9yTc30oe1wOBqz9guf7L/tHy/wDRfO8jzNw+/t3Yx16d+lekaLqF/Z+HvC076rBZ6SDPJqKyXMatcRiZ9ymMnfKCCQFAIy3rWTpmvatdeB5tP0jX5LKa3vt6QS6oLbFuUI2qXdQQCOVB75xQ9E/66gtWcJRXovh7UWisdBaw1i0sdJgD/wBs2st0kZmO9i++EndMGjKqMBvTjFW9C1nT7Xw/YHSo98cbz/brF9bt7JJ8ucCWOVMzAxlQCCcYI4PJHp/X9aAeX0V6J4c1WG10G3t7nUbSLUZPP/saaSYMdNDKQfMfcAm88Ln7py+ADza8Pata2PhrTUtAs7wmZdSs/wC3bezjuWLH/WJIp85ShABBOMEDB5I9P6/r5geY0V21rd3Z8G2cXhbVotOcPOdRh/tBLSSQk/JksymRdnAAzg54GeeJo6gFXdL0ybVbpoYXjiEcTzSSSkhURFLEnAJ7Y6ckiltNM+16XfXv26zg+xhD9nml2yz7jj92uPmx1PoK1I/+JP4GeTpda3J5a+q20ZBb8GkwP+2Zo6MDK0jTJtZ1i1061aNJrmQRo0hIUE+uAT+lUyNrEHsa9M8HagLVPDb2WvWul6fCznVImvVhaWXzDjemQZFKlADgqMHJHNL4e1iztPDOm/YQJjEZhqFmdbt7KO4Ysf8AWxypmZShUAgnGCODyR6AjzGiu/8ADd6z+FzYy350axLTyfarPWoopCGXpNbZ3zY2gADacE4zVSyu70eCbKHwzq8NhKrTHUohfpaSSkn5CSzKZF2cADODnjnkegHMXelzWem2F7K0Zjvkd4gpO4BXKnPHqO2apV6XoGqz22h+GTFrFla6batK2qQtdxK8kfnMSjRZ8yQFScLgj5vfNZcN5ct4Rto/CerRacwlnbUIft8dnJJlv3eSzKZF2cAAnBzxzyPS4LU4ite18LazeNpotrJnOq7/ALH86jzdhw3U/LjHfHrWRXodj4pg0xfDliPs8qLFbMZxMP8ART57mUH0LIQDnGBVJX+8luxyUPhnU5rM3RS2gh3MqtdXkMHmFeG2B3BfB4yueeKNP8M6rqdmt3bQRLA7+XG89zHD5r91Tew3npwueo9a6y08q+drPxCdHuNBjuJzFdDUYkurRCzEtEqvvbn5gjI2ewGc07T00rW28OPM2lz2FpCLG9ttQvhatABMWMyjzELZVs8bucgjOKhar+v6/rcuWjZxkGgapc6Pc6rFZyfYbXHmzsQqj5gvGfvYLKDjOMjOM1nV3Gg2zT+HPEMQ1CxSK4thBYxXOpwxtxcq5UK7gqMBjyAD+NcQRg4oC2/qa1r4W1m8bTRbWTOdV3/Y/nUebsOG6n5cY749aSHwzqc1mbopbQQ7mVWuryGDzCvDbA7gvg8ZXPPFdbY+KYNMXw5Yj7PKixWzGcTD/RT57mUH0LIQDnGBSWnlXztZ+ITo9xoMdxOYroajEl1aIWYlolV97c/MEZGz2AzmnLRu3n+AlqtfL8Tk9P8ADOq6nZrd20ESwO/lxvPcxw+a/dU3sN56cLnqPWooNA1S50e51WKzk+w2uPNnYhVHzBeM/ewWUHGcZGcZrs9PTStbbw48zaXPYWkIsb221C+Fq0AExYzKPMQtlWzxu5yCM4qnoNs0/hzxDENQsUiuLYQWMVzqcMbcXKuVCu4KjAY8gA/jQ+v9f1cF0v5fj/kcPRV+10v7Vpd/e/brKH7Fs/cTTbZZ9xx+7XHzY6n0Fd74b1izs/CulixXzTF5w1GzbW7eyjuGLHiWOVMyqUIAIJxgjg8k6AeZ1r6f4W1jVLEXdlaB4m3+WGmRHm2DLeWjMGkwOu0Gspypdii7VJ4BOcD616boGraXHp3hm/iOmpNpYaO9lvZ18y2VZGkzFASN7OHPzAOc4xtIzT6A9zzCip72Zbm/uJ412pLKzqvoCc4qCpWq1G9GFFFFMR1Vnba+vh64Fu2mppd5NI2L2a0VndRtJQSneCAcZXB5rKHhrV2h0uUWZMerP5dk29cStu246/Lz/exXTjybrwPYQx2ui3s0E12ZBfakIJYNzLgqnnJnOCeQ3StDw9q2nPceFdPvb61ihigiuDLJKoFvNFdSvhiT8u6NmGD/AHlPpVWV/u/X/Im7t95xVp4X1a9tjcRQRRxeYYle4uYoRI46qm9hvI9Fz1HrUtr4P1u8sYru3tY2SYSGKM3USyy7M79sRbexGDwFNbOsW0XiPSdKbTdQ0+I2KS29xBc3iQlCZnfzFDkbwwYfcyeMelauh6xpdvpPhqyeeyivBFeRxai0hLWErOdjMpbaFOerLkA5BGKjVr+v61LdkzhjoWpfadPgFsXk1JVa0COreaGbaMEHAOQQQeR3xV6LwTrs8atDb28hkMgijW+gMkxQkNsTfuflT90HPbNaeha//Zvg/V7eV4DfWb/8S6QygvGZv3cxT+98oByOh5qWDxBpmkaD4ZultmvdUsVmeILdqscL+cxXzIwpY9jjcuaenT+v6/EWphWPhPVNR09r62+w/Z0x5jS6lbxGPJwNytICuSOMgZptl4X1PUNOlvrX7EbeE4laTUbeMpzgZDOCMkccc9s1Z028jPhPxGs80az3DW7IhYBpCJCWwO+ParmgWDTeCdbQXWnxyXZg8mOfUIInbY5LfKzgjj1HPbNIelyOJPFK6JpVmsEb2eqb4NPeSKB3O5trIshBeMFieMqOT6ms6z8LavfW5nht4kj80wo09zFD5rjqqb2G8j0XPUetdp4e1bTnuPCun3t9axQxQRXBlklUC3miupXwxJ+XdGzDB/vKfSmQ/wBla/faFNO2k3FjbKbK+t72/FsYB5xYzJ+8QtlWyCN3OcjOKqS1+b+7+v8AMlbHC2ukz3elahfo8axWHl+arkhm3ttG0Y9eucVQrobKRE8O+I4oJ7RIXaHbHLPtkcCQ48tcHfgdeRgc81z1SncpqzsFFFFMRZnv7m5s7W1nk3Q2issK7QNgZix5HJ5J61WoooAK04vEGo2+lPp9u8EMEiGORorWJJXQnJVpQu8g9wWwenSsyigAooooAKKKKANCy1y+07T7mzs2hSK6QpMxto2kZTjKiQqWA4HAIqmJ5hbm3Er+SzhzHuO0sAQDjpnBPPvUdFABRRRQAVen1i9uNKh015I1tIW3rHFCke5sY3OVALnHALZIyfWqNFAFme/ubmztbWeTdDaKywrtA2BmLHkcnknrVaiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooA2m8M6tPeqkNsGE/nSRu0qKuyNiHZiSAoBU8tisbpXpuoXun6l4d/sOO/trO9mNy6zPMqq225dxBKxPyBuGB4GQM5GMN8N6vZ2XhbTBZKJTD5w1GzOuW9lHcMWP+tjkQ+cpQgAgnGCODyR9QPM6K73QdRgPhddXlIFx4ZkcWyNyWE2fJGe+yTc30rm9Onvv+Ed1oQ6nawW8ohNzbTOPNuvnyuzIJO08nBHHrR1Axq0bfQdTutGudWhs3Nha482diFX7wXjJ+bBZc4zjIzjNZ1dp4Yt5rjwlrkc1/Yp9ps0gtIrnUoI2yLhHZQruCo4Y8gA/jR0Dqjm9N0PUdXhvJtOtjNHZRGa4fcqhFAJ7kZOATgc8HjimXelzWem2F7K0Zjvkd4gpO4BXKnPHqO2a7bwzrHh6LR1019RvLLbY3TXStaxlJp3iZch/OG4hcKq4GTnkbqs6Hqslro3hr7NrNpb6XavK2pxPdRJJLF5zHY8W4vIGQnCYYZb8aHvb+uoulzgLvS5rPTbC9laMx3yO8QUncArlTnj1HbNWLPw1qt/pzX1rbo8IV3CmeNZHVBlikZYO4HcqCOD6Gu50fV3g0vw69pq1nZ6TbyTPqVu13EsjxeczeW0Wd8gKEgLgj5vxrK8N2MVjptxr1hdae2oz+bDZWs2pW8BtVYFTK4dwc4JCr+J7ZXR/wBehXU5uz8Narf6c19a26PCFdwpnjWR1QZYpGWDuB3Kgjg+hrKrtvCunLp2jS63bXmnSarKslvaW8upW8P2YEFWmcO4JOCQq49z2zs+A7ixsNO003OsBLeaWUX0B1SG3hQH5QssBUvPuHfoAQMjBIb3/r+v6sLoee3elzWem2F7K0Zjvkd4gpO4BXKnPHqO2afpuh6jq8N5Np1sZo7KIzXD7lUIoBPcjJwCcDng8cV3mh6rNbaN4aMGsWVrplq8rapCbuJXkj85iUaLO+QFCcLgj5vfNQ+H9b8NDTW09L+90+P7HdvPG9pHtlleNlBDmYbiFIVVwMnPI3UPZ/MOtvM4uy0HUL+ye8hjhjtkYr51zcRwKzAZKqZGUMQOy5PI9RUV3pc1nptheytGY75HeIKTuAVypzx6jtmu60e+sZtD8PxGbRn02zaZNUj1BIROIzKWyivl8lG48rncME8DE2jaq9tpPhw2msWdrpNq8zalA93EskkXnMfLeLO+QFCcLgjLe+aHuHQ4Sy0HUL+ye8hjhjtkYr51zcRwKzAZKqZGUMQOy5PI9RVjTPCmqaxHEdO+wytNnZCdRt0lOM5/ds4bse1dfpeoWFzo+goH0UaZayTrqcN+sPnLGZS/yB/nJKNgGLnIwTwMc1pc1ppOh6pqcU6fbLgmysYg4MkaMP3kpHUfJ8gPfefSh9f6/q4+pl6boeo6vDeS6fbGaOyiM1w+9VCKAT1JGTgE4GScHjis+vQ/DGs+Ho9GXTX1G8sQthdNdK1pGVmmeJlyHMoLELhVXAyc8jdXnzhRIwjJZM/KWGCR9OcUPSVhLVXG0UUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQBuQeGtT1W2udRtjZm3jc+a8uoQRFCSQNyu4IyemRz2qmdE1FbnT7f7MTLqSI9oqsp80MxVcEHj5gRg9O9dBo9g03hHX0F1p8cl28Pkxz6hBE7bJCW+VnBHHqOe2au+GtU08eFYr69u4Y9Q8OPM9nDI4DTiVf3YUdW2S/McdAaNtewtdjlL/UdRWzGi3TRxwWkrZihjjUFx8uWZB+8I5AYk98Hms2tnTZr1fDmspb6la29tIIftNrMwEt18/y7AQSdp5OCOPWsaj1K9DQ03Q9R1eG8m062M0dlEZrh9yqEUAnuRk4BOBzweOKz69D8Maz4ej0ZdNfUbyxC2F010rWkZWaZ4mXIcygsQuFVcDJzyN1UrW6uh4NtIPCusx2Lq851GM30dnLNz8hO518xdnAUFsHd68ktGJar5/ocTWvp/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67Qa7fwFcWNjpumtcaxstppZRfW7apDbQoD8oWWBlLz7h36AHGRgkP0LVtKjsfDV/CdMSXS90d5LeTr5lsqytJmGAkb2cOfmAc5xjaRmmI4LS9DfUrO5vJb21sLO2ZEe4ut5Uu2dqgIrMSQrHpgY5NRaZpUura5BpdnNEZLiXyo5WLBCc8HpnH4Z9q6eLxY6eDtUWFdMWRtShaGGawtndoyspJIZDvIyo3HJGcZ5rX8H6j9mXw5JZa9a6Xp8LOdUia8WBpZTIcb4wQXUqUAOCowckc0v+B+VxvRHCWegahfWcl3EkMdtGxTzrm4jgR2AyVUyMu4gdlyeR6iotI0ybWdYtdOtWjSa5kEaNISFBPrgE/pXdaPf2dxofh+OSXRW0+0aZNVjvhD5wQylyUD/Oco3Bi5yOegxZ8J6hHav4efTNettL0uGSQ6lFJerC8snmNjemQZAUMYBwVGDkjmjb+v6+QPrY89vNKnsdPsbyVozHfK7RhScgI5Q549R71NpehvqVnc3kt7a2FnbMiPcXW8qXbO1QEVmJIVj0wMcmu40TVprbR/DZh1iyttNtnlbVIWu4leSPzmJRos75AVJwuCDu981jWnic23gfUILddMV1v4PIhmsLZ3aPbLkkMhLkfKNxyRnGeaNk/66j6nPx+HtSn0u71O3tzLp9ocSXQ+VG+YLld2C3LLnAyNwzjNLpehvqVnc3kt7a2FnbMiPcXW8qXbO1QEVmJIVj0wMcmug8M289z4T11Jr+xT7VZpBaRXOpQRNkXCOyhHcFRwx5AB/Go9O8Sy2fgC8tV/sszx3tuI4pbC2kZ02S7mIZCXwdvzHJGcZ5o2T+X5iWv3v8jnr/SZdPsrO7eaGWG9EjRNGW5COUJIIGMkZHt6VNZ+GtVv9Oa+tbdHhCu4UzxrI6oMsUjLB3A7lQRwfQ122g6tPb6J4ZaLWLK1022aV9VgN3EjyR+cxKNFnfICpOE2kfN071m+G7GKx02416wutPbUZ/NhsrWbUreA2qsCplcO4OcEhV/E9sj0T/r0DdnPaf4V1jVLOO5s7eNkmLCFZLmKOSfb97y0Zgz46fKDzx1rI6da9L8MXdlHo2hebd2DrbPOZ7q4u4Y7jTMk8wxty/B39JMk/KEbmvNZMeY21i4ycMRgn3oe9gWw2iiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKAJJ/+PiT/AHz/ADqOpJ/+PiT/AHz/ADqOgAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigCSf/j4k/wB8/wA6sW2n/adNvLz7Xaw/ZAh8iWXbJNuOP3a4+bHU+grrIrq9HhK2g8M6vDYTLLOdSiF+lpJKd3yElmUyLs4AGcHPHPMegpe3HgDWbKTVLRYLhYmtbS41WGP51lBciN3G04HUgZ7ZofUOxxdXbvS5rPTbC9laMx3yO8QUncArlTnj1HbNeh6HfXth4c8Ky/2nb2Wjp5z6hG9zGjTxiZ9yGMnfKCpICgEZaq2ieJEtR4TsYdRitdPkeYX8Pmqo2NM+ElP93aejcc5ofYOlzziivTfDusWVn4Y0wWCiXyTMNQszrdvZR3BLH/WxypmZShUAgnGCODyceHxddaF4V0JdFuYo3S6uJLi3DAs67lKxyYwxQjPy8A/hwdbAcn9guf7L/tHy/wDRfO8jzNw+/t3Yx16d+lVq7rS9f1i88DS2Om6+1lcwX28QNqYtQIDGflTe6gqGH3Qe44rS8N6xZ2fhXSxYr5pi84ajZtrdvZR3DFjxLHKmZVKEAEE4wRweSd/66B0R5nVn7Bc/2X/aPl/6L53keZuH39u7GOvTv0ru/Dmqw2ug29vc6jaRajJ5/wDY00kwY6aGUg+Y+4BN54XP3Tl8AHmrpeta1N4Fl0zT/ET213a32fKfVRbgwGMjCMzhWXcPug9wcc0PRP8Arr+gLVr+v6ucLRRXfeGLyRvCgsbjUTpFnmZzd2WsxQucrj99bbt8wyoAA2nBOM0dGw62OK+wXP8AZf8AaPl/6L53keZuH39u7GOvTv0qtXcaPrmsXHgF9O03xDJaXNteBhFLqYtv3BjIwpd1BG4fdB7jirvh7UWisdBaw1i0sdJgD/2zay3SRmY72L74Sd0waMqowG9OMU+r+X5C6HnVFdwPF0+heG9FGgXMce28uZZrfILOm9SkcuMMUIz8ucH8K1vD2t2dv4a01rGNXKGb+0bEa1b2MU7Mx4kilQmVShAGCcYI4PJXS4+tjz7SNMm1nWLXTrVo0muZBGjSEhQT64BP6VTI2sQexr03wjqK23/COyafrtrpOmwvIdThe+WJ5JDIcB0yDIChQBsFRg5xzXmb8yNj1NHWwFq20/7Tpt5efa7WH7IEPkSy7ZJtxx+7XHzY6n0FU67TQUvbjwBrNlJqlosFwsTWtpcarDH86yguRG7jacDqQM9s1o+H/Ef2ODwhp41SOCyYyrqMQmVVKmVvll/2dp4Dcc570MV9LnnVFbOny3ieHtajtdStLe1fyvPtZWUSXID/AC+WCCTtPJwRx61jUDNe18LazeNpotrJnOq7/sfzqPN2HDdT8uMd8etJD4Z1OazN0UtoIdzKrXV5DB5hXhtgdwXweMrnniutsfFMGmL4csR9nlRYrZjOJh/op89zKD6FkIBzjApLTyr52s/EJ0e40GO4nMV0NRiS6tELMS0Sq+9ufmCMjZ7AZzRLRu3n+ALVa+X4nJ6f4Z1XU7Nbu2giWB38uN57mOHzX7qm9hvPThc9R61FBoGqXOj3OqxWcn2G1x5s7EKo+YLxn72Cyg4zjIzjNdnp6aVrbeHHmbS57C0hFje22oXwtWgAmLGZR5iFsq2eN3OQRnFU9Btmn8OeIYhqFikVxbCCxiudThjbi5VyoV3BUYDHkAH8aH1/r+rgul/L8f8AI4eir9rpf2rS7+9+3WUP2LZ+4mm2yz7jj92uPmx1PoK73w3rFnZ+FdLFivmmLzhqNm2t29lHcMWPEscqZlUoQAQTjBHB5J0A8zopzlS7FF2qTwCc4H1ptABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQBsrobXOlXuryX1rbQQ3BhVJRIXlcgsFXahHQHliB71jV00n/JObr/ALDS/wDop66LQ/7Cvrbw3carqFrFdwokaGScL5AhneRt4zxuQqFz1PSn1fy/K4r6ff8AmcrFpWvazoVu6IktnZxy/Z4zLEkhQEvIUQkO4BJJIBxg+lR6Z4U1TWI4jp32GVps7ITqNukpxnP7tnDdj2rotCtxFa3niS3u9Pk1a8eaO1t5tSghNsHyGlcSOCThiFXHue2cTR5bfSPD2o6kZ4jqE4NlaRJIC8YYfvZSOoG35Ae+846VPT5fj/Vira/Mz4NA1S50e51WGzc2FrjzZyQq/eC8ZPzYLLnbnGRnrWdXaeGLea48Ja5HNf2KfabNILSK51KCNsi4R2UK7gqOGPIAP41t+A7ixsNO003OsBLeaWUX0B1SG3hQH5QssBUvPuHfoAQMjBIbF0+Z5hV270uaz02wvZWjMd8jvEFJ3AK5U549R2zXb+HNUitNBt7a61OzTU5PP/sedpQ39nZUg723YjDnhQfunL8A8v0PxCbFfCWnHVIYbQvMmpIsyBWUyv8ALKwPKkHOCcc5HXND7BsrnJ6d4Yn1C0hnkvbKx+1OY7RLp2Vrlhwdu1SAM4G5iq578HFTUNGutMs7O4utqi7EhWPnchRyjBgRwcg+tel2EelpY2gmbSVL2KorX0kIdB9mUxmPzDlf3zyksuOUwT0BhHi6GTXdCS11OODTLq8unvY/MVAY3uHIWX/ZKtna3HOaJaOyD7N2eVUV6b4d1iys/DGmCwUS+SZhqFmdbt7KO4JY/wCtjlTMylCoBBOMEcHkv8C3On2Vjpzy6t5VpPNL9ttm1WG3hjUnaElgZC8+4d+gBxkYJA+oHnmkaZNrOsWunWrRpNcyCNGkJCgn1wCf0qmRtYg9jXpvhHUBa/8ACOvY69a6Xp0LyHVImvVhaWXzDjemQZFKFADgqMHJHNeZvzI2PU0dbB3G0V6hod9e2HhzwrL/AGnb2Wjp5z6hG9zGjTxiZ9yGMnfKCpICgEZasaPxfc6H4X0MaHcxRst3cS3FuCCWTepWOTB3FCM/LnB/CjrYOhxFXNO0/wDtGSdPtdra+TA82bqXYH2jOxeOWPYd67vQtTZbbQ5LDVrLT9Ji3nWbN7pIvNPmMX3Qk7pg0ZVVADdMcYrL8I61fm+1DToL+8XSv7PvmWzM7eUB5MhGVzjrjt1oel/n+H9aDW6+RxlFemeG9Ys7PwrpYsV80xecNRs21u3so7hix4ljlTMqlCACCcYI4PJybW7uz4Ns4vC2rRac4ec6jD/aCWkkhJ+TJZlMi7OABnBzwM8j0uJanJfYLn+y/wC0fL/0XzvI8zcPv7d2MdenfpVyz8Narf6c19a26PCFdwpnjWR1QZYpGWDuB3Kgjg+hro9H1zWLjwC+nab4hktLm2vAwil1MW37gxkYUu6gjcPug9xxTPCunrp+iya5bXmnSarMskFpby6lbwG2BBVpXDuCTgkKuPc9sj0v/XT/AD/rQF0Of0zQ21XT724gvrWOWzhad7aQSeY6LjLKQhXv0LA1PpvhHVNT0mfUohbQWkMbSCS6uUh8wBgp2hiM8sBnpnjOeKn8IjH9vD/qD3H81rq/CbJdeAZ4PFDae2j70gjn+2RJcW8ZLyNjDbiQyhhGyknPAxkgf6fq0C/X9EzzGinOFDsEJK54JGCRXZWV3ejwTZQ+GdXhsJVaY6lEL9LSSUk/ISWZTIuzgAZwc8c8nS4dbHF0V2lt4tu9A8I6Amj3cSyx3M8lzCCMyKGXakmDu2H5vlzg/hVrQtTik8MjWbgot14bkk+zoFwG87PlAf7km5vpQ9rgcDVn7Bc/2X/aPl/6L53keZuH39u7GOvTv0r0jRdQv7Pw94WnfVYLPSQZ5NRWS5jVriMTPuUxk75QQSAoBGW9aydM17VrrwPNp+ka/JZTW99vSCXVBbYtyhG1S7qCARyoPfOKHon/AF1Bas4SivRfD2otFY6C1hrFpY6TAH/tm1lukjMx3sX3wk7pg0ZVRgN6cYq3oWs6fa+H7A6VHvjjef7dYvrdvZJPlzgSxypmYGMqAQTjBHB5I9P6/rQDy+ivRPDmqw2ug29vc6jaRajJ5/8AY00kwY6aGUg+Y+4BN54XP3Tl8AHm14e1a1sfDWmpaBZ3hMy6lZ/27b2cdyxY/wCsSRT5ylCACCcYIGDyR6f1/XzA8xortrW7uz4Ns4vC2rRac4ec6jD/AGglpJISfkyWZTIuzgAZwc8DPPE0dQCrul6ZNqt00MLxxCOJ5pJJSQqIiliTgE9sdOSRS2mmfa9Lvr37dZwfYwh+zzS7ZZ9xx+7XHzY6n0Fakf8AxJ/AzydLrW5PLX1W2jILfg0mB/2zNHRgZWkaZNrOsWunWrRpNcyCNGkJCgn1wCf0qmRtYg9jXpng7UBap4bey1610vT4Wc6pE16sLSy+Ycb0yDIpUoAcFRg5I5pfD2sWdp4Z037CBMYjMNQszrdvZR3DFj/rY5UzMpQqAQTjBHB5I9AR5jRXf+G71n8Lmxlvzo1iWnk+1WetRRSEMvSa2zvmxtAAG04Jxmqlld3o8E2UPhnV4bCVWmOpRC/S0klJPyElmUyLs4AGcHPHPI9AOYu9Lms9NsL2VozHfI7xBSdwCuVOePUds1Sr0vQNVnttD8MmLWLK1021aVtUha7iV5I/OYlGiz5kgKk4XBHze+ay4by5bwjbR+E9Wi05hLO2oQ/b47OSTLfu8lmUyLs4ABODnjnkelwWpxFa9r4W1m8bTRbWTOdV3/Y/nUebsOG6n5cY749ayK9DsfFMGmL4csR9nlRYrZjOJh/op89zKD6FkIBzjAqkr/eS3Y5KHwzqc1mbopbQQ7mVWuryGDzCvDbA7gvg8ZXPPFGn+GdV1OzW7toIlgd/Ljee5jh81+6pvYbz04XPUetdZaeVfO1n4hOj3Ggx3E5iuhqMSXVohZiWiVX3tz8wRkbPYDOadp6aVrbeHHmbS57C0hFje22oXwtWgAmLGZR5iFsq2eN3OQRnFQtV/X9f1uXLRs4vTtC1LVobyXT7VpY7GIzXDFlURqASepGTgHgc8Hjis+vR9B1jw1FYPpseo3llEtneNOrWsZSaV42UEOZgWIXCqpAyc8jdXnThRIwjJZM/KWGCR9OcUX1+QW0+Zq2vhbWbxtNFtZM51Xf9j+dR5uw4bqflxjvj1pIfDOpzWZuiltBDuZVa6vIYPMK8NsDuC+Dxlc88V1tj4pg0xfDliPs8qLFbMZxMP9FPnuZQfQshAOcYFJaeVfO1n4hOj3Ggx3E5iuhqMSXVohZiWiVX3tz8wRkbPYDOactG7ef4CWq18vxOT0/wzqup2a3dtBEsDv5cbz3McPmv3VN7DeenC56j1qHTtC1LVobyXT7VpY7GIzXDFlURqASepGTgHgc8Hjiu009NK1tvDjzNpc9haQixvbbUL4WrQATFjMo8xC2VbPG7nIIzin6DrHhqKwfTY9RvLKJbO8adWtYyk0rxsoIczAsQuFVSBk55G6h9fn/XzBdPkecUVoW+lrdadqF7Hf2kSWezbDcSbJrgM2P3ac5I6nngetd54b1izs/CulixXzTF5w1GzbW7eyjuGLHiWOVMyqUIAIJxgjg8k6AeZ1r6f4W1jVLEXdlaB4m3+WGmRHm2DLeWjMGkwOu0Gspypdii7VJ4BOcD616boGraXHp3hm/iOmpNpYaO9lvZ18y2VZGkzFASN7OHPzAOc4xtIzT6A9zzCip72Zbm/uJ412pLKzqvoCc4qCpWq1G9GFFFFMR1Vnba+vh64Fu2mppd5NI2L2a0VndRtJQSneCAcZXB5rKHhrV2h0uUWZMerP5dk29cStu246/Lz/exXTjybrwPYQx2ui3s0E12ZBfakIJYNzLgqnnJnOCeQ3StDw9q2nPceFdPvb61ihigiuDLJKoFvNFdSvhiT8u6NmGD/eU+lVZX+79f8ibu33nFWnhfVr22NxFBFHF5hiV7i5ihEjjqqb2G8j0XPUetS2vg/W7yxiu7e1jZJhIYozdRLLLszv2xFt7EYPAU1s6xbReI9J0ptN1DT4jYpLb3EFzeJCUJmd/MUORvDBh9zJ4x6Vq6HrGl2+k+GrJ57KK8EV5HFqLSEtYSs52MyltoU56suQDkEYqNWv6/rUt2TOGOhal9p0+AWxeTUlVrQI6t5oZtowQcA5BBB5HfFXovBOuzxq0NvbyGQyCKNb6AyTFCQ2xN+5+VP3Qc9s1p6Fr/APZvg/V7eV4DfWb/APEukMoLxmb93MU/vfKAcjoealg8QaZpGg+GbpbZr3VLFZniC3arHC/nMV8yMKWPY43Lmnp0/r+vxFqYVj4T1TUdPa+tvsP2dMeY0upW8RjycDcrSArkjjIGabZeF9T1DTpb61+xG3hOJWk1G3jKc4GQzgjJHHHPbNWdNvIz4T8RrPNGs9w1uyIWAaQiQlsDvj2q5oFg03gnW0F1p8cl2YPJjn1CCJ22OS3ys4I49Rz2zSHpcjiTxSuiaVZrBG9nqm+DT3kigdzubayLIQXjBYnjKjk+prOs/C2r31uZ4beJI/NMKNPcxQ+a46qm9hvI9Fz1HrXaeHtW057jwrp97fWsUMUEVwZZJVAt5orqV8MSfl3Rswwf7yn0pkP9la/faFNO2k3FjbKbK+t72/FsYB5xYzJ+8QtlWyCN3OcjOKqS1+b+7+v8yVscLa6TPd6VqF+jxrFYeX5quSGbe20bRj165xVCuhspETw74jigntEhdodscs+2RwJDjy1wd+B15GBzzXPVKdymrOwUUUUxFme/ubmztbWeTdDaKywrtA2BmLHkcnknrVaiigArTi8Qajb6U+n27wQwSIY5GitYkldCclWlC7yD3BbB6dKzKKACiiigAooooA0LLXL7TtPubOzaFIrpCkzG2jaRlOMqJCpYDgcAiqYnmFubcSv5LOHMe47SwBAOOmcE8+9R0UAFFFFABV6fWL240qHTXkjW0hbescUKR7mxjc5UAuccAtkjJ9ao0UAWZ7+5ubO1tZ5N0NorLCu0DYGYseRyeSetVqKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigDXTw7ql7PEbe2DLdLLNE7Soq7IyQ7MSQFAweWxWT0r0Nbyw1DwRaaCt/b2d9LDMwmeZVVts7v5ErE/IG4YHgZAzkYxY8N6vZ2XhbTBZKJTD5w1GzOuW9lHcMWP+tjkQ+cpQgAgnGCODyR9QPM6K73QdRgPhddXlIFx4ZkcWyNyWE2fJGe+yTc30rm9Onvv+Ed1oQ6nawW8ohNzbTOPNuvnyuzIJO08nBHHrR1Axq0bfQdTutGudWhs3Nha482diFX7wXjJ+bBZc4zjIzjNZ1dp4Yt5rjwlrkc1/Yp9ps0gtIrnUoI2yLhHZQruCo4Y8gA/jR0Dqjm9N0PUdXhvJtOtjNHZRGa4fcqhFAJ7kZOATgc8HjimXelzWem2F7K0Zjvkd4gpO4BXKnPHqO2a7bwzrHh6LR1019RvLLbY3TXStaxlJp3iZch/OG4hcKq4GTnkbqs6Hqslro3hr7NrNpb6XavK2pxPdRJJLF5zHY8W4vIGQnCYYZb8aHvb+uoulzgLvS5rPTbC9laMx3yO8QUncArlTnj1HbNWLPw1qt/pzX1rbo8IV3CmeNZHVBlikZYO4HcqCOD6Gu50fV3g0vw69pq1nZ6TbyTPqVu13EsjxeczeW0Wd8gKEgLgj5vxrK8N2MVjptxr1hdae2oz+bDZWs2pW8BtVYFTK4dwc4JCr+J7ZXR/16FdTm7Pw1qt/pzX1rbo8IV3CmeNZHVBlikZYO4HcqCOD6Gsqu28K6cunaNLrdteadJqsqyW9pby6lbw/ZgQVaZw7gk4JCrj3PbOz4DuLGw07TTc6wEt5pZRfQHVIbeFAflCywFS8+4d+gBAyMEhvf8Ar+v6sLoee3elzWem2F7K0Zjvkd4gpO4BXKnPHqO2afpuh6jq8N5Np1sZo7KIzXD7lUIoBPcjJwCcDng8cV3mh6rNbaN4aMGsWVrplq8rapCbuJXkj85iUaLO+QFCcLgj5vfNQ+H9b8NDTW09L+90+P7HdvPG9pHtlleNlBDmYbiFIVVwMnPI3UPZ/MOtvM4uy0HUL+ye8hjhjtkYr51zcRwKzAZKqZGUMQOy5PI9RUV3pc1nptheytGY75HeIKTuAVypzx6jtmu60e+sZtD8PxGbRn02zaZNUj1BIROIzKWyivl8lG48rncME8DE2jaq9tpPhw2msWdrpNq8zalA93EskkXnMfLeLO+QFCcLgjLe+aHuHQ4Sy0HUL+ye8hjhjtkYr51zcRwKzAZKqZGUMQOy5PI9RVjTPCmqaxHEdO+wytNnZCdRt0lOM5/ds4bse1dfpeoWFzo+goH0UaZayTrqcN+sPnLGZS/yB/nJKNgGLnIwTwMc1pc1ppOh6pqcU6fbLgmysYg4MkaMP3kpHUfJ8gPfefSh9f6/q4+pl6boeo6vDeS6fbGaOyiM1w+9VCKAT1JGTgE4GScHjis+vQ/DGs+Ho9GXTX1G8sQthdNdK1pGVmmeJlyHMoLELhVXAyc8jdXnzhRIwjJZM/KWGCR9OcUPSVhLVXG0UUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQBt2/hjUtStbm/tfsf2aFyJGl1CCIpyQMq7gjJ6ZHPaqh0TUVudPt/sxMupIj2iqynzQzFVwQePmBGD0710Ok2DTeE/EKC60+OS7ki8mOfUIInbZIS3ys4I49Rz2zVzw1qmnjwrFfXt3DHqHhx5ns4ZHAacSr+7Cjq2yX5jjoDRtr2F5HKX+o6itmNFumjjgtJWzFDHGoLj5csyD94RyAxJ74PNZtbOmzXq+HNZS31K1t7aQQ/abWZgJbr5/l2Agk7TycEcetY1HqV6Ghpuh6jq8N5Np1sZo7KIzXD7lUIoBPcjJwCcDng8cVn16H4Y1nw9Hoy6a+o3liFsLprpWtIys0zxMuQ5lBYhcKq4GTnkbqpWt1dDwbaQeFdZjsXV5zqMZvo7OWbn5Cdzr5i7OAoLYO715JaMS1Xz/Q4mtfT/AAtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNdv4CuLGx03TWuNY2W00sovrdtUhtoUB+ULLAyl59w79ADjIwSH6Fq2lR2Phq/hOmJLpe6O8lvJ18y2VZWkzDASN7OHPzAOc4xtIzTEcFpehvqVnc3kt7a2FnbMiPcXW8qXbO1QEVmJIVj0wMcmotM0qXVtcg0uzmiMlxL5UcrFghOeD0zj8M+1dPF4sdPB2qLCumLI2pQtDDNYWzu0ZWUkkMh3kZUbjkjOM81r+D9R+zL4ckstetdL0+FnOqRNeLA0spkON8YILqVKAHBUYOSOaX/A/K43ojhLPQNQvrOS7iSGO2jYp51zcRwI7AZKqZGXcQOy5PI9RUWkaZNrOsWunWrRpNcyCNGkJCgn1wCf0rutHv7O40Pw/HJLorafaNMmqx3wh84IZS5KB/nOUbgxc5HPQYs+E9QjtX8PPpmvW2l6XDJIdSikvVheWTzGxvTIMgKGMA4KjByRzRt/X9fIH1see3mlT2On2N5K0ZjvldowpOQEcoc8eo96m0vQ31KzubyW9tbCztmRHuLreVLtnaoCKzEkKx6YGOTXcaJq01to/hsw6xZW2m2zytqkLXcSvJH5zEo0Wd8gKk4XBB3e+axrTxObbwPqEFuumK638HkQzWFs7tHtlySGQlyPlG45IzjPNGyf9dR9Tn4/D2pT6Xd6nb25l0+0OJLofKjfMFyu7BbllzgZG4Zxml0vQ31KzubyW9tbCztmRHuLreVLtnaoCKzEkKx6YGOTXQeGbee58J66k1/Yp9qs0gtIrnUoImyLhHZQjuCo4Y8gA/jUeneJZbPwBeWq/2WZ4723EcUthbSM6bJdzEMhL4O35jkjOM80bJ/L8xLX73+Rz1/pMun2VndvNDLDeiRomjLchHKEkEDGSMj29Kms/DWq3+nNfWtujwhXcKZ41kdUGWKRlg7gdyoI4Poa7bQdWnt9E8MtFrFla6bbNK+qwG7iR5I/OYlGizvkBUnCbSPm6d6zfDdjFY6bca9YXWntqM/mw2VrNqVvAbVWBUyuHcHOCQq/ie2R6J/16BuzntP8ACusapZx3NnbxskxYQrJcxRyT7fveWjMGfHT5QeeOtZHTrXpfhi7so9G0LzbuwdbZ5zPdXF3DHcaZknmGNuX4O/pJkn5Qjc15rJjzG2sXGThiME+9D3sC2G0UUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQBJP/wAfEn++f51HUk//AB8Sf75/nUdABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFAEk//AB8Sf75/nVi20/7Tpt5efa7WH7IEPkSy7ZJtxx+7XHzY6n0FdZDd3o8JW0PhnV4bCVZZzqUQv0tJJSW+QksymRdnAAzg5455j0FL248AazZSapaLBcLE1raXGqwx/OsoLkRu42nA6kDPbND6h2OLq7d6XNZ6bYXsrRmO+R3iCk7gFcqc8eo7Zr0PQ769sPDnhWX+07ey0dPOfUI3uY0aeMTPuQxk75QVJAUAjLVW0TxIlqPCdjDqMVrp8jzC/h81VGxpnwkp/u7T0bjnND7B0uecUV6b4d1iys/DGmCwUS+SZhqFmdbt7KO4JY/62OVMzKUKgEE4wRweTjw+LrrQvCuhLotzFG6XVxJcW4YFnXcpWOTGGKEZ+XgH8ODrYDk/sFz/AGX/AGj5f+i+d5Hmbh9/buxjr079KrV3Wl6/rF54GlsdN19rK5gvt4gbUxagQGM/Km91BUMPug9xxWl4b1izs/CulixXzTF5w1GzbW7eyjuGLHiWOVMyqUIAIJxgjg8k7/10DojzOrP2C5/sv+0fL/0XzvI8zcPv7d2MdenfpXd+HNVhtdBt7e51G0i1GTz/AOxppJgx00MpB8x9wCbzwufunL4APNXS9a1qbwLLpmn+Intru1vs+U+qi3BgMZGEZnCsu4fdB7g45oeif9df0Batf1/VzhaKK77wxeSN4UFjcaidIs8zObuy1mKFzlcfvrbdvmGVAAG04Jxmjo2HWxxX2C5/sv8AtHy/9F87yPM3D7+3djHXp36VWruNH1zWLjwC+nab4hktLm2vAwil1MW37gxkYUu6gjcPug9xxV3w9qLRWOgtYaxaWOkwB/7ZtZbpIzMd7F98JO6YNGVUYDenGKfV/L8hdDzqiu4Hi6fQvDeijQLmOPbeXMs1vkFnTepSOXGGKEZ+XOD+Fa3h7W7O38Naa1jGrlDN/aNiNat7GKdmY8SRSoTKpQgDBOMEcHkrpcfWx59pGmTazrFrp1q0aTXMgjRpCQoJ9cAn9KpkbWIPY16b4R1Fbb/hHZNP1210nTYXkOpwvfLE8khkOA6ZBkBQoA2Cowc45rzN+ZGx6mjrYC1baf8AadNvLz7Xaw/ZAh8iWXbJNuOP3a4+bHU+gqnXaaCl7ceANZspNUtFguFia1tLjVYY/nWUFyI3cbTgdSBntmtHw/4j+xweENPGqRwWTGVdRiEyqpUyt8sv+ztPAbjnPehivpc86orZ0+W8Tw9rUdrqVpb2r+V59rKyiS5Af5fLBBJ2nk4I49axqBmva+FtZvG00W1kznVd/wBj+dR5uw4bqflxjvj1pIfDOpzWZuiltBDuZVa6vIYPMK8NsDuC+Dxlc88V1tj4pg0xfDliPs8qLFbMZxMP9FPnuZQfQshAOcYFJaeVfO1n4hOj3Ggx3E5iuhqMSXVohZiWiVX3tz8wRkbPYDOaJaN28/wBarXy/E5PT/DOq6nZrd20ESwO/lxvPcxw+a/dU3sN56cLnqPWodO0LUtWhvJdPtWljsYjNcMWVRGoBJ6kZOAeBzweOK7TT00rW28OPM2lz2FpCLG9ttQvhatABMWMyjzELZVs8bucgjOKfoOseGorB9Nj1G8sols7xp1a1jKTSvGyghzMCxC4VVIGTnkbqH1+f9fMF0+R5xRWhb6Wt1p2oXsd/aRJZ7NsNxJsmuAzY/dpzkjqeeB613nhvWLOz8K6WLFfNMXnDUbNtbt7KO4YseJY5UzKpQgAgnGCODyToB5nRTnKl2KLtUngE5wPrTaACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigCSf/j4k/wB8/wA6joooAsz39zc2drazybobRWWFdoGwMxY8jk8k9arUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQB//2Q==)Figure 5.5: Demonstration of successful encryption of MSG1 and MSG4 shows the successful encryption of MSG1 and MSG4. The resulting ciphertext is stored in MSG1.e and MSG4.e respectively. The same key was used for both encryption commands.

Figure .: Demonstration of successful encryption of MSG1 and MSG4.

![A picture containing text, electronics

Description automatically generated](data:image/jpeg;base64,/9j/4AAQSkZJRgABAQEAYABgAAD/4RDoRXhpZgAATU0AKgAAAAgABAE7AAIAAAAKAAAISodpAAQAAAABAAAIVJydAAEAAAAUAAAQzOocAAcAAAgMAAAAPgAAAAAc6gAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAEFtaW5hIEhhcQAABZADAAIAAAAUAAAQopAEAAIAAAAUAAAQtpKRAAIAAAADMzcAAJKSAAIAAAADMzcAAOocAAcAAAgMAAAIlgAAAAAc6gAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADIwMjE6MDM6MTEgMjA6NTU6NTQAMjAyMTowMzoxMSAyMDo1NTo1NAAAAEEAbQBpAG4AYQAgAEgAYQBxAAAA/+ELHGh0dHA6Ly9ucy5hZG9iZS5jb20veGFwLzEuMC8APD94cGFja2V0IGJlZ2luPSfvu78nIGlkPSdXNU0wTXBDZWhpSHpyZVN6TlRjemtjOWQnPz4NCjx4OnhtcG1ldGEgeG1sbnM6eD0iYWRvYmU6bnM6bWV0YS8iPjxyZGY6UkRGIHhtbG5zOnJkZj0iaHR0cDovL3d3dy53My5vcmcvMTk5OS8wMi8yMi1yZGYtc3ludGF4LW5zIyI+PHJkZjpEZXNjcmlwdGlvbiByZGY6YWJvdXQ9InV1aWQ6ZmFmNWJkZDUtYmEzZC0xMWRhLWFkMzEtZDMzZDc1MTgyZjFiIiB4bWxuczpkYz0iaHR0cDovL3B1cmwub3JnL2RjL2VsZW1lbnRzLzEuMS8iLz48cmRmOkRlc2NyaXB0aW9uIHJkZjphYm91dD0idXVpZDpmYWY1YmRkNS1iYTNkLTExZGEtYWQzMS1kMzNkNzUxODJmMWIiIHhtbG5zOnhtcD0iaHR0cDovL25zLmFkb2JlLmNvbS94YXAvMS4wLyI+PHhtcDpDcmVhdGVEYXRlPjIwMjEtMDMtMTFUMjA6NTU6NTQuMzY1PC94bXA6Q3JlYXRlRGF0ZT48L3JkZjpEZXNjcmlwdGlvbj48cmRmOkRlc2NyaXB0aW9uIHJkZjphYm91dD0idXVpZDpmYWY1YmRkNS1iYTNkLTExZGEtYWQzMS1kMzNkNzUxODJmMWIiIHhtbG5zOmRjPSJodHRwOi8vcHVybC5vcmcvZGMvZWxlbWVudHMvMS4xLyI+PGRjOmNyZWF0b3I+PHJkZjpTZXEgeG1sbnM6cmRmPSJodHRwOi8vd3d3LnczLm9yZy8xOTk5LzAyLzIyLXJkZi1zeW50YXgtbnMjIj48cmRmOmxpPkFtaW5hIEhhcTwvcmRmOmxpPjwvcmRmOlNlcT4NCgkJCTwvZGM6Y3JlYXRvcj48L3JkZjpEZXNjcmlwdGlvbj48L3JkZjpSREY+PC94OnhtcG1ldGE+DQogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIAogICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgCiAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAKICAgICAgICAgICAgICAgICAgICAgICAgICAgIDw/eHBhY2tldCBlbmQ9J3cnPz7/2wBDAAcFBQYFBAcGBQYIBwcIChELCgkJChUPEAwRGBUaGRgVGBcbHichGx0lHRcYIi4iJSgpKywrGiAvMy8qMicqKyr/2wBDAQcICAoJChQLCxQqHBgcKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKioqKir/wAARCACkAkMDASIAAhEBAxEB/8QAHwAAAQUBAQEBAQEAAAAAAAAAAAECAwQFBgcICQoL/8QAtRAAAgEDAwIEAwUFBAQAAAF9AQIDAAQRBRIhMUEGE1FhByJxFDKBkaEII0KxwRVS0fAkM2JyggkKFhcYGRolJicoKSo0NTY3ODk6Q0RFRkdISUpTVFVWV1hZWmNkZWZnaGlqc3R1dnd4eXqDhIWGh4iJipKTlJWWl5iZmqKjpKWmp6ipqrKztLW2t7i5usLDxMXGx8jJytLT1NXW19jZ2uHi4+Tl5ufo6erx8vP09fb3+Pn6/8QAHwEAAwEBAQEBAQEBAQAAAAAAAAECAwQFBgcICQoL/8QAtREAAgECBAQDBAcFBAQAAQJ3AAECAxEEBSExBhJBUQdhcRMiMoEIFEKRobHBCSMzUvAVYnLRChYkNOEl8RcYGRomJygpKjU2Nzg5OkNERUZHSElKU1RVVldYWVpjZGVmZ2hpanN0dXZ3eHl6goOEhYaHiImKkpOUlZaXmJmaoqOkpaanqKmqsrO0tba3uLm6wsPExcbHyMnK0tPU1dbX2Nna4uPk5ebn6Onq8vP09fb3+Pn6/9oADAMBAAIRAxEAPwDxVvD7vp1/qU99a2sVtdG3CSiQvLJgttUKhHQHliB71iV1+rEN4P1Ur0PiEkf9+5K2dD/sK+tvDdxquoWsV3CiRoZJwvkCGd5G3jPG5CoXPU9KfV/L8ri6ff8AmcrFpWvazoVu6IktnZxy/Z4zLEkhQEvIUQkO4BJJIBxg+lR6Z4U1TWI4jp32GVps7ITqNukpxnP7tnDdj2rotCtxFa3niS3u9Pk1a8eaO1t5tSghNsHyGlcSOCThiFXHue2cTR5bfSPD2o6kZ4jqE4NlaRJIC8YYfvZSOoG35Ae+846VPT5fj/Vira/Mz4NA1S50e51WGzc2FrjzZyQq/eC8ZPzYLLnbnGRnrWdXaeGLea48Ja5HNf2KfabNILSK51KCNsi4R2UK7gqOGPIAP41t+A7ixsNO003OsBLeaWUX0B1SG3hQH5QssBUvPuHfoAQMjBIbF0+Z5hV270uaz02wvZWjMd8jvEFJ3AK5U549R2zXb+HNUitNBt7a61OzTU5PP/sedpQ39nZUg723YjDnhQfunL8A8v0PxCbFfCWnHVIYbQvMmpIsyBWUyv8ALKwPKkHOCcc5HXND7BsrnJ6d4Yn1C0hnkvbKx+1OY7RLp2Vrlhwdu1SAM4G5iq578HFTUNGutMs7O4utqi7EhWPnchRyjBgRwcg+tel2EelpY2gmbSVL2KorX0kIdB9mUxmPzDlf3zyksuOUwT0BhHi6GTXdCS11OODTLq8unvY/MVAY3uHIWX/ZKtna3HOaJaOyD7N2eVUV6b4d1iys/DGmCwUS+SZhqFmdbt7KO4JY/wCtjlTMylCoBBOMEcHkv8C3On2Vjpzy6t5VpPNL9ttm1WG3hjUnaElgZC8+4d+gBxkYJA+oHnmkaZNrOsWunWrRpNcyCNGkJCgn1wCf0qmRtYg9jXpvhHUBa/8ACOvY69a6Xp0LyHVImvVhaWXzDjemQZFKFADgqMHJHNeZvzI2PU0dbB3G0V6hod9e2HhzwrL/AGnb2Wjp5z6hG9zGjTxiZ9yGMnfKCpICgEZasaPxfc6H4X0MaHcxRst3cS3FuCCWTepWOTB3FCM/LnB/CjrYOhxFXNO0/wDtGSdPtdra+TA82bqXYH2jOxeOWPYd67vQtTZbbQ5LDVrLT9Ji3nWbN7pIvNPmMX3Qk7pg0ZVVADdMcYrL8I61fm+1DToL+8XSv7PvmWzM7eUB5MhGVzjrjt1oel/n+H9aDW6+RxlFemeG9Ys7PwrpYsV80xecNRs21u3so7hix4ljlTMqlCACCcYI4PJybW7uz4Ns4vC2rRac4ec6jD/aCWkkhJ+TJZlMi7OABnBzwM8j0uJanJfYLn+y/wC0fL/0XzvI8zcPv7d2MdenfpVyz8Narf6c19a26PCFdwpnjWR1QZYpGWDuB3Kgjg+hro9H1zWLjwC+nab4hktLm2vAwil1MW37gxkYUu6gjcPug9xxTPCunrp+iya5bXmnSarMskFpby6lbwG2BBVpXDuCTgkKuPc9sj0v/XT/AD/rQF0Of0zQ21XT724gvrWOWzhad7aQSeY6LjLKQhXv0LA1PpvhHVNT0mfUohbQWkMbSCS6uUh8wBgp2hiM8sBnpnjOeKn8IjH9vD/qD3H81rq/CbJdeAZ4PFDae2j70gjn+2RJcW8ZLyNjDbiQyhhGyknPAxkgf6fq0C/X9EzzGinOFDsEJK54JGCRXofh7UWisdBaw1i0sdJgD/2zay3SRmY72L74Sd0waMqowG9OMUdAehw+kaZNrOsWunWrRpNcyCNGkJCgn1wCf0qmRtYg9jXqHhbUYrebQJNL1y20nSopZDqMMl6sLyOZG2h0yDIChjAOCowckc15g/MjY9TSH3G1du9Lms9NsL2VozHfI7xBSdwCuVOePUds062m0lLCRLyyvZbs58uWK8SONeOMoYmJ5/2hn2613mgarPbaH4ZMWsWVrptq0rapC13EryR+cxKNFnzJAVJwuCPm980yTzSte18LazeNpotrJnOq7/sfzqPN2HDdT8uMd8etZk7I1xI0K7YyxKg9hniu/sfFMGmL4csR9nlRYrZjOJh/op89zKD6FkIBzjApx1S9Qlo3Y5KHwzqc1mbopbQQ7mVWuryGDzCvDbA7gvg8ZXPPFGn+GdV1OzW7toIlgd/Ljee5jh81+6pvYbz04XPUetdZaeVfO1n4hOj3Ggx3E5iuhqMSXVohZiWiVX3tz8wRkbPYDOadp6aVrbeHHmbS57C0hFje22oXwtWgAmLGZR5iFsq2eN3OQRnFStV/X9f1uVLRs4yDQNUudHudVis5PsNrjzZ2IVR8wXjP3sFlBxnGRnGazq7jQbZp/DniGIahYpFcWwgsYrnU4Y24uVcqFdwVGAx5AB/GuWtdL+1aXf3v26yh+xbP3E022Wfccfu1x82Op9BR5hb87FCivTPDesWdn4V0sWK+aYvOGo2ba3b2UdwxY8SxypmVShABBOMEcHk+auVLsUXapPAJzgfWm9HYS2uNooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigDrNOs/E91o13Fp1vbzWN3NI4juEt2kmdFO5oRJ87MATzHyPrWVp/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67Qa7zRtW0uO28O38R01JtLLx3st7OvmWyrK0mYoCRvZw5+YBznGNpGafpmuaRKug6tbDTYXsHkF297OvmWqCZpMxQZG9mDkbgHOcY2kZpvf+vv8AQS2OA0/wtrGqWIu7K0DxNv8ALDTIjzbBlvLRmDSYHXaDRp/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67Qa7/TNc0iVdB1a2GmwvYPILt72dfMtUEzSZigyN7MHI3AOc4xtIzRpmuaRKug6tbDTYXsHkF297OvmWqCZpMxQZG9mDkbgHOcY2kZpf1/wRnAaf4W1jVLEXdlaB4m3+WGmRHm2DLeWjMGkwOu0GjT/C2sapYi7srQPE2/yw0yI82wZby0Zg0mB12g13+ma5pEq6Dq1sNNheweQXb3s6+ZaoJmkzFBkb2YORuAc5xjaRmjTNc0iVdB1a2GmwvYPILt72dfMtUEzSZigyN7MHI3AOc4xtIzR/X/BA4DT/AAtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNZFeraZrmkSroOrWw02F7B5Bdvezr5lqgmaTMUGRvZg5G4BznGNpGa8wvZlub+4njXaksrOq+gJzilrf+v61H0Ok0yDxXqHhtYbKGCay2Sxweclv57KBmRYS/wC9I5ORH6n1NZFl4e1DUbJrmyW3mCqzeSt5F5xCgliIt284AJ4XoM13egatpceneGb+I6ak2lho72W9nXzLZVkaTMUBI3s4c/MA5zjG0jNZHhh4I9Qn1O7TS7WzuHmJvXv1F3aowYHy4RITu54zGTzwR1Dlo38/+B94lsjmbLQdQv7J7yGOGO2RivnXNxHArMBkqpkZQxA7Lk8j1FZtejaLfWc+geHopJdFOn2hmTVYr5YfOCGUuSgf5zlG4MXORg9BjzyXZ5z+Tny9x25647UPf+v69A6GlZ+GtVv9Oa+tbdHhCu4UzxrI6oMsUjLB3A7lQRwfQ1Hb6Dqd1o1zq0Nm5sLXHmzsQq/eC8ZPzYLLnGcZGcZrpPCunrp+iya5bXmnSarMskFpby6lbwG2BBVpXDuCTgkKuPc9sp4Ztp5/CeuxTahYp9os0gtIrnU4I2yLhHZQruCo4Y8gA/jQ92C6epkxaVr2s6FbuiJLZ2ccv2eMyxJIUBLyFEJDuASSSAcYPpWDXbeFdOXTtGl1u2vNOk1WVZLe0t5dSt4fswIKtM4dwScEhVx7ntniiMHFD3sHQ07Lw9qGo2TXNktvMFVm8lbyLziFBLERbt5wATwvQZrQsm8SN4RvJbC2ji0qKPy7i6jtoYndC4BXzdokcZZQQCeozxirvgtIrI/bL8aXBayLIr37X6i7t1KFT5cIkyW9Mxk88EdQ/wAM201x4T1yOXULFPtNmkFnFc6lBE2RcI5UK7gqOGPIAP40PqgW69Tm9N0PUdXhvJtOtjNHZRGa4fcqhFAJ7kZOATgc8Hjis+vQ/DOseHotHXTX1G8sttjdNdK1rGUmneJlyH84biFwqrgZOeRurz5wokYRksmflLDBI+nOKHo7AtrmnZ+GtVv9Oa+tbdHhCu4UzxrI6oMsUjLB3A7lQRwfQ07T/C2sapYi7srQPE2/yw0yI82wZby0Zg0mB12g1veFdPXT9Fk1y2vNOk1WZZILS3l1K3gNsCCrSuHcEnBIVce57Z29A1XS4tP8M38R0xJtLDR3st5cL5lsqyNJmGDI8xnDn5gHOcY2kZp9f6/rsI5DSk8QweF9SutNtUXSyhS6uWt4txViqlVkYbyMlchDxkE4zWEJ5hbm3Er+SzhzHuO0sAQDjpnBPPvXbaKsmo6D4kdr2xhS+gEdlBdalBEw/wBJWQqFdwVGNx5AB7da4YjBxU77ldNO5oW+g6ndaNc6tDZubC1x5s7EKv3gvGT82Cy5xnGRnGaks/DWq3+nNfWtujwhXcKZ41kdUGWKRlg7gdyoI4Poa3/DFvNceEtcjmv7FPtNmkFpFc6lBG2RcI7KFdwVHDHkAH8ad4V05dO0aXW7a806TVZVkt7S3l1K3h+zAgq0zh3BJwSFXHue2W9ExLX7znrPw1qt/pzX1rbo8IV3CmeNZHVBlikZYO4HcqCOD6Gsqu28K6cunaNLrdteadJqsqyW9pby6lbw/ZgQVaZw7gk4JCrj3PbPFEYOKHvYOhp2Xh7UNRsmubJbeYKrN5K3kXnEKCWIi3bzgAnhegzTrbw3qN1piagn2OK2kLBGuL+CFn29cK7hjj2FbfgtIrI/bL8aXBayLIr37X6i7t1KFT5cIkyW9Mxk88EdRJ4eFre6RZ23iKDSP7IgMpN22obLyEN1KxLLljkDAMZz9OaGBzWm6HqOrw3k2nWxmjsojNcPuVQigE9yMnAJwOeDxxWfXonhrWfDsejjTTqN7ZKtjdNcq9pHtmmeJlyHMw3ELhVXAyc8jdXnrhRIwjJZM/KWGCR9OcUPR2BbXNXT/C2sapYi7srQPE2/yw0yI82wZby0Zg0mB12g0lt4b1G60xNQT7HFbSFgjXF/BCz7euFdwxx7Cu50DVtLj07wzfxHTUm0sNHey3s6+ZbKsjSZigJG9nDn5gHOcY2kZrM0qaz1a3jXX7XSU0VZp5BctqAS8t1cknbEsuWOQMAxnP05olo3b+v+HBbXOa0/wtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNZFeoaDq2lR6f4av4DpqSaWGjvJb2dfMtkWVpMxQEjezhz8wDnOMbSM15tezLc39xPGu1JZWdV9ATnFD0dv6/pgti1b6Dqd1o1zq0Nm5sLXHmzsQq/eC8ZPzYLLnGcZGcZqbT/C2sapYi7srQPE2/yw0yI82wZby0Zg0mB12g1u+GLea48Ja5HNf2KfabNILSK51KCNsi4R2UK7gqOGPIAP41uaBqulxaf4Zv4jpiTaWGjvZby4XzLZVkaTMMGR5jOHPzAOc4xtIzTF0/ry/r5Hn+m6HqOrw3k2nWxmjsojNcPuVQigE9yMnAJwOeDxxWfXpWi6/4bltZrQX97p6Pa3ktxG9pFtlmkRgCH80biFIVVwMnPI3V5u4USMIyWTPylhgkfTnFT1+RXT5mnZ+GtVv9Oa+tbdHhCu4UzxrI6oMsUjLB3A7lQRwfQ0WfhrVb/TmvrW3R4QruFM8ayOqDLFIywdwO5UEcH0NdB4V09dP0WTXLa806TVZlkgtLeXUreA2wIKtK4dwScEhVx7ntlfCunLp2jS63bXmnSarKslvaW8upW8P2YEFWmcO4JOCQq49z2y3pf0/ES1sczpuh6jq8N5Np1sZo7KIzXD7lUIoBPcjJwCcDng8cVn16H4Z1jw9Fo66a+o3lltsbprpWtYyk07xMuQ/nDcQuFVcDJzyN1efOFEjCMlkz8pYYJH05xQ9HYFtcv2+g6ndaNc6tDZubC1x5s7EKv3gvGT82Cy5xnGRnGafZeHtQ1Gya5slt5gqs3kreRecQoJYiLdvOACeF6DNdB4Yt5rjwlrkc1/Yp9ps0gtIrnUoI2yLhHZQruCo4Y8gA/jTfBkcVk32y/wD7LgtXWRXv2v1F3bqUKny4hISW9MxsecgjqB9QW3zMKz8Narf6c19a26PCFdwpnjWR1QZYpGWDuB3Kgjg+hrKrtvCunrp+jS65a3mnyapMskFpbzalbwG2BBVpnDuDnBIVce57Z4ojBxQ97B0ua2n+FtY1SxF3ZWgeJt/lhpkR5tgy3lozBpMDrtBpLbw3qN1piagn2OK2kLBGuL+CFn29cK7hjj2FdzoGraXHp3hm/iOmpNpYaO9lvZ18y2VZGkzFASN7OHPzAOc4xtIzWZpU1nq1vGuv2ukpoqzTyC5bUAl5bq5JO2JZcscgYBjOfpzRLRu39f8ADgtrnNaf4W1jVLEXdlaB4m3+WGmRHm2DLeWjMGkwOu0GsivUNB1bSo9P8NX8B01JNLDR3kt7OvmWyLK0mYoCRvZw5+YBznGNpGa82vZlub+4njXaksrOq+gJzih6O39f0wWxoaf4W1jVLEXdlaB4m3+WGmRHm2DLeWjMGkwOu0GktvDeo3WmJqCfY4raQsEa4v4IWfb1wruGOPYV3OgatpceneGb+I6ak2lho72W9nXzLZVkaTMUBI3s4c/MA5zjG0jNZmlTWerW8a6/a6SmirNPILltQCXlurkk7YllyxyBgGM5+nNEtG7f1/w4La5y9l4e1DUbJrmyW3mCqzeSt5F5xCgliIt284AJ4XoM1l12XgxIbJvtl7/ZkFo4kVr979ReW6FCp8uESElvTMbHngjqOO+lHUOhqWfhrVb/AE5r61t0eEK7hTPGsjqgyxSMsHcDuVBHB9DUWm6HqOrw3k2nWxmjsojNcPuVQigE9yMnAJwOeDxxXS+FdPXT9Fk1y2vNOk1WZZILS3l1K3gNsCCrSuHcEnBIVce57ZveGdY8PRaOumvqN5ZbbG6a6VrWMpNO8TLkP5w3ELhVXAyc8jdQ9L+n4gtbev8AX9f0+StvDeo3WmJqCfY4raQsEa4v4IWfb1wruGOPYVk12+gizvNLtbbX4dJOiwNMRePfCO8hVupWFZclsgYBjb8ua4k43HbnGeM0dQ6Ghb6Dqd1o1zq0Nm5sLXHmzsQq/eC8ZPzYLLnGcZGcZpNN0PUdXhvJtOtjNHZRGa4fcqhFAJ7kZOATgc8Hjiuk8MW81x4S1yOa/sU+02aQWkVzqUEbZFwjsoV3BUcMeQAfxq/4Z1jw9Fo66a+o3lltsbprpWtYyk07xMuQ/nDcQuFVcDJzyN1D2foC1t6/5HIWXh7UNRsmubJbeYKrN5K3kXnEKCWIi3bzgAnhegzWXXZ+Do4LKQ3l2dNis3EqnUJL5VvLdCpUmOESE7vTMbHng9xxv0o6h0NOy8PahqNk1zZLbzBVZvJW8i84hQSxEW7ecAE8L0GabZaDqF/ZPeQxwx2yMV865uI4FZgMlVMjKGIHZcnkeorf8FpFZH7ZfjS4LWRZFe/a/UXdupQqfLhEmS3pmMnngjqNXRb6zn0Dw9FJLop0+0MyarFfLD5wQylyUD/Oco3Bi5yMHoMDA46z8Narf6c19a26PCFdwpnjWR1QZYpGWDuB3Kgjg+hrKruPDWnxafpc+uWF3p8mozebBZW8+pW8DWykFTK4dwScEhVx7ntniCMHFHUfQ1LPw1qt/pzX1rbo8IV3CmeNZHVBlikZYO4HcqCOD6GmWWg6hf2T3kMcMdsjFfOubiOBWYDJVTIyhiB2XJ5HqK6Pwrp66fosmuW15p0mqzLJBaW8upW8BtgQVaVw7gk4JCrj3PbOjot9aTaB4eill0U2Fm00erRXohMwQyliUD/Oco3Bi5yOegwPsLpc46z8Narf6c19a26PCFdwpnjWR1QZYpGWDuB3Kgjg+hrKruPDWnxafpc+uWF3p8mozebBZW8+pW8DWykFTK4dwScEhVx7ntniCMHFHUfQSiiigRt23hbWNUhe7srQPEzyeWGmRHm2ct5aMwaTA67Qaj0/wtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNd5o2raXHbeHb+I6ak2ll472W9nXzLZVlaTMUBI3s4c/MA5zjG0jNP0zXNIlXQdWthpsL2DyC7e9nXzLVBM0mYoMjezByNwDnOMbSM03v/X3iW39fccBp/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67QaNP8LaxqliLuytA8Tb/LDTIjzbBlvLRmDSYHXaDXf6ZrmkSroOrWw02F7B5Bdvezr5lqgmaTMUGRvZg5G4BznGNpGaNM1zSJV0HVrYabC9g8gu3vZ18y1QTNJmKDI3swcjcA5zjG0jNL+v8AgjOA0/wtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNNs/DWq3+nNfWtujwhXcKZ41kdUGWKRlg7gdyoI4Poa9B0zXNIlXQdWthpsL2DyC7e9nXzLVBM0mYoMjezByNwDnOMbSM1i6DaxwWl54isrnT21K6eaOytZtSt4Daq2VaVw7g5wSFXHue2Vrb+vl949P6/roc1p/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67QayK9Q0DVdLi0/wAM38R0xJtLDR3st5cL5lsqyNJmGDI8xnDn5gHOcY2kZrza9mW5v7ieNdqSys6r6AnOKb0lZf1/w4ltd/1/wxes/DWq3+nNfWtujwhXcKZ41kdUGWKRlg7gdyoI4Poajt9B1O60a51aGzc2FrjzZ2IVfvBeMn5sFlzjOMjOM10nhXT10/RZNctrzTpNVmWSC0t5dSt4DbAgq0rh3BJwSFXHue2U8M208/hPXYptQsU+0WaQWkVzqcEbZFwjsoV3BUcMeQAfxoe7BdPUwLPw1qt/pzX1rbo8IV3CmeNZHVBlikZYO4HcqCOD6Gsqu28K6cunaNLrdteadJqsqyW9pby6lbw/ZgQVaZw7gk4JCrj3PbPFEYOKHvYOhqWfhrVb/TmvrW3R4QruFM8ayOqDLFIywdwO5UEcH0NLbeG9RutMTUE+xxW0hYI1xfwQs+3rhXcMcewrf8K6eun6LJrlteadJqsyyQWlvLqVvAbYEFWlcO4JOCQq49z2yvh8Wt5pNpa+I7fSBpEBmJuzqAW7hDdSkSy5Y5AwDGc/Tmh6NgtjmdN0PUdXhvJtOtjNHZRGa4fcqhFAJ7kZOATgc8Hjis+vRPDWs+HY9HGmnUb2yVbG6a5V7SPbNM8TLkOZhuIXCquBk55G6vPXCiRhGSyZ+UsMEj6c4oejsC2uX7fQdTutGudWhs3Nha482diFX7wXjJ+bBZc4zjIzjNTaf4W1jVLEXdlaB4m3+WGmRHm2DLeWjMGkwOu0Gt3wxbzXHhLXI5r+xT7TZpBaRXOpQRtkXCOyhXcFRwx5AB/GtzQNV0uLT/DN/EdMSbSw0d7LeXC+ZbKsjSZhgyPMZw5+YBznGNpGaYun9eX9fI8/03Q9R1eG8m062M0dlEZrh9yqEUAnuRk4BOBzweOKz69K0XX/AA3LazWgv73T0e1vJbiN7SLbLNIjAEP5o3EKQqrgZOeRurzdwokYRksmflLDBI+nOKnr8iunzNOz8Narf6c19a26PCFdwpnjWR1QZYpGWDuB3Kgjg+hqXTPCmqaxHEdO+wytNnZCdRt0lOM5/ds4bse1bfhXT10/RZNctrzTpNVmWSC0t5dSt4DbAgq0rh3BJwSFXHue2cvR5bfSPD2o6kZ4jqE4NlaRJIC8YYfvZSOoG35Ae+846U3pf+v66CWpnwaBqlzo9zqsNm5sLXHmzkhV+8F4yfmwWXO3OMjPWs6u08MW81x4S1yOa/sU+02aQWkVzqUEbZFwjsoV3BUcMeQAfxrjCMHFHUFqrmtp/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67QaS28N6jdaYmoJ9jitpCwRri/ghZ9vXCu4Y49hXc6Bq2lx6d4Zv4jpqTaWGjvZb2dfMtlWRpMxQEjezhz8wDnOMbSM1maVNZ6tbxrr9rpKaKs08guW1AJeW6uSTtiWXLHIGAYzn6c0S0bt/X/AA4La5ylvoOp3WjXOrQ2bmwtcebOxCr94Lxk/NgsucZxkZxms6u08M20tx4U12OTULFBc2aQWcV1qUETZFwjlQruCo4Y8gA/jXGEYOKOodPma2n+FtY1SxF3ZWgeJt/lhpkR5tgy3lozBpMDrtBqKy0HUL+ye8hjhjtkYr51zcRwKzAZKqZGUMQOy5PI9RXe6Bq2lx6d4Zv4jpqTaWGjvZb2dfMtlWRpMxQEjezhz8wDnOMbSM0yx1Wx1DTtFYvoo02Ca4/tSC+WHzkjaZn+QP8AOSUbAMXORg9Bgejsv68/QFtc4rT/AAtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNZFepaLq2jpaeHNQtP7OjbSy0d1LfTr5tsiytJmKAkb2dX+8A5z02kZrzS9mW5v7ieNdqSys6r6AnOKHvb+v6Y+hdsvD2oajZNc2S28wVWbyVvIvOIUEsRFu3nABPC9BmmW+g6ndaNc6tDZubC1x5s7EKv3gvGT82Cy5xnGRnGa6DwWkVkftl+NLgtZFkV79r9Rd26lCp8uESZLemYyeeCOof4ZtprjwnrkcuoWKfabNILOK51KCJsi4RyoV3BUcMeQAfxoYl09TC0/wtrGqWIu7K0DxNv8ALDTIjzbBlvLRmDSYHXaDWRXqGgarpcWn+Gb+I6Yk2lho72W8uF8y2VZGkzDBkeYzhz8wDnOMbSM15tezLc39xPGu1JZWdV9ATnFD0lZf1/w4La7/AK/4Y0NP8LaxqliLuytA8Tb/ACw0yI82wZby0Zg0mB12g0/TPCmqaxHEdO+wytNnZCdRt0lOM5/ds4bse1droGraXHp3hm/iOmpNpYaO9lvZ18y2VZGkzFASN7OHPzAOc4xtIzXMWd5a2OmaxrSSxre3jva2UCuvmRK+TJIVHI+Q7Ae+846US0bt/Xb7wWqX9f1Yy7Lw7qOo2bXNkttMFVm8lbyHziFBLERbt5wATwvQZrLrsfBaRWR+2X40uC1kWRXv2v1F3bqUKny4RJkt6ZjJ54I6jj/pQ97B0NOy8PahqNk1zZLbzBVZvJW8i84hQSxEW7ecAE8L0GaLLw9qGo2TXNktvMFVm8lbyLziFBLERbt5wATwvQZrd8FpFZH7ZfjS4LWRZFe/a/UXdupQqfLhEmS3pmMnngjqF8GJFZH7Zff2XBausivfvfqLu3UoVPlwiQnd6ZjY88EdQPS/oCMO28N6jdaYmoJ9jitpCwRri/ghZ9vXCu4Y49hWTXa+Hha3ukWdt4ig0j+yIDKTdtqGy8hDdSsSy5Y5AwDGc/TmuLONx25xnjNHUOhoW+g6ndaNc6tDZubC1x5s7EKv3gvGT82Cy5xnGRnGaks/DWq3+nNfWtujwhXcKZ41kdUGWKRlg7gdyoI4Poa3/DFvNceEtcjmv7FPtNmkFpFc6lBG2RcI7KFdwVHDHkAH8ad4V05dO0aXW7a806TVZVkt7S3l1K3h+zAgq0zh3BJwSFXHue2R6JgtfvOes/DWq3+nNfWtujwhXcKZ41kdUGWKRlg7gdyoI4Poayq7bwrpy6do0ut215p0mqyrJb2lvLqVvD9mBBVpnDuCTgkKuPc9s8URg4oe9g6Gtp/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67QaNP8LaxqliLuytA8Tb/LDTIjzbBlvLRmDSYHXaDXcaBq2lx6d4Zv4jpqTaWGjvZb2dfMtlWRpMxQEjezhz8wDnOMbSM1PpmuaRKug6tbDTYXsHkF297OvmWqCZpMxQZG9mDkbgHOcY2kZpvf8Ar7xLb+vuPP7bw3qN1piagn2OK2kLBGuL+CFn29cK7hjj2FZNd5pU1nq1vGuv2ukpoqzTyC5bUAl5bq5JO2JZcscgYBjOfpzXCHG47c4zxmpV+pRoW+g6ndaNc6tDZubC1x5s7EKv3gvGT82Cy5xnGRnGaks/DWq3+nNfWtujwhXcKZ41kdUGWKRlg7gdyoI4Poa3/DFvNceEtcjmv7FPtNmkFpFc6lBG2RcI7KFdwVHDHkAH8ad4V05dO0aXW7a806TVZVkt7S3l1K3h+zAgq0zh3BJwSFXHue2W9ExLX7zmdN0PUdXhvJtOtjNHZRGa4fcqhFAJ7kZOATgc8Hjis+vQ/DOseHotHXTX1G8sttjdNdK1rGUmneJlyH84biFwqrgZOeRurz5wokYRksmflLDBI+nOKHo7AtrmlZeHtQ1Gya5slt5gqs3kreRecQoJYiLdvOACeF6DNOtvDeo3WmJqCfY4raQsEa4v4IWfb1wruGOPYVt+C0isj9svxpcFrIsivftfqLu3UoVPlwiTJb0zGTzwR1Enh4Wt7pFnbeIoNI/siAyk3bahsvIQ3UrEsuWOQMAxnP05oYHOWWg6hf2T3kMcMdsjFfOubiOBWYDJVTIyhiB2XJ5HqKza9G0W+s59B8PRPLop0+0aZNViv1h84IZS5KB/nJKNwYucjnoMeeS7POfyc+XuO3PXHah7/wBf16B0NGy8PahqNk1zZLbzBVZvJW8i84hQSxEW7ecAE8L0GabZaDqF/ZPeQxwx2yMV865uI4FZgMlVMjKGIHZcnkeorf8ABaRWR+2X40uC1kWRXv2v1F3bqUKny4RJkt6ZjJ54I6jV0W+s59A8PRSS6KdPtDMmqxXyw+cEMpclA/znKNwYucjB6DAwOKt9B1O60a51aGzc2FrjzZ2IVfvBeMn5sFlzjOMjOM1nV23h23e48Ma/H9vskjubVYLGK71KCNuLhXK7XcFeAx5AB59a4ojBxQPp8zUs/DWq3+nNfWtujwhXcKZ41kdUGWKRlg7gdyoI4Poai03Q9R1eG8m062M0dlEZrh9yqEUAnuRk4BOBzweOK6Xwrp66fosmuW15p0mqzLJBaW8upW8BtgQVaVw7gk4JCrj3PbN7wzrHh6LR1019RvLLbY3TXStaxlJp3iZch/OG4hcKq4GTnkbqHpf0/ES1t6/1/X9PltM8KaprEcR077DK02dkJ1G3SU4zn92zhux7VjdK6LSZbXSNA1LU0uEa9nzZWUe5RIisP3kpUElfk+Uf75x0rnKOodDVs/DWq3+nNfWtujwhXcKZ41kdUGWKRlg7gdyoI4Poajt9B1O60a51aGzc2FrjzZ2IVfvBeMn5sFlzjOMjOM10nhXT10/RZNctrzTpNVmWSC0t5dSt4DbAgq0rh3BJwSFXHue2U8M208/hPXYptQsU+0WaQWkVzqcEbZFwjsoV3BUcMeQAfxoe7BdPU52y0HUL+ye8hjhjtkYr51zcRwKzAZKqZGUMQOy5PI9RWbXo2i31pNoHh6KWXRTYWbTR6tFeiEzBDKWJQP8AOco3Bi5yOegx55Ls85/Jz5e47c9cdqHv/X9egdBlFFFAG3beFtY1SF7uytA8TPJ5YaZEebZy3lozBpMDrtBqPT/C2sapYi7srQPE2/yw0yI82wZby0Zg0mB12g13mj6tpcdv4dv4jpqTaWXjvZb2dfMtlWVpMxQEjezhz8wDnOMbSM0/TNc0iVdB1a2GmwvYPILt72dfMtUEzSZigyN7MHI3AOc4xtIzTe/9feJbf19xwGn+FtY1SxF3ZWgeJt/lhpkR5tgy3lozBpMDrtBo0/wtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNd/pmuaRKug6tbDTYXsHkF297OvmWqCZpMxQZG9mDkbgHOcY2kZo0zXNIlXQdWthpsL2DyC7e9nXzLVBM0mYoMjezByNwDnOMbSM0v6/wCCM4DT/C2sapYi7srQPE2/yw0yI82wZby0Zg0mB12g1Bpuh6jq8N5Np1sZo7KIzXD7lUIoBPcjJwCcDng8cV6NpmuaRKug6tbDTYXsHkF297OvmWqCZpMxQZG9mDkbgHOcY2kZqnouv+G5bWa0F/e6ej2t5LcRvaRbZZpEYAh/NG4hSFVcDJzyN1LWz+f9fP8AruPqvkcZp/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67QayK9R0LVtIjsfDd/bNpyvpe6O7nvplEtuiytJuit93zs4c8gOQem0jNea3sy3N/cTxrtSWVnVfQE5xTe9l/X/DiW1/6/pF2y8PahqNk1zZLbzBVZvJW8i84hQSxEW7ecAE8L0Gaj03Q9R1eG8m062M0dlEZrh9yqEUAnuRk4BOBzweOK6HwWkVkftl+NLgtZFkV79r9Rd26lCp8uESZLemYyeeCOo0vDOs+HY9GXTW1G9sgthdNcq1pHtmmeJlyHMwLELhVXAyc8jdQ+voC3Xqcnp/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67QayK9R0LVtIjsfDd/bNpyvpe6O7nvplEtuiytJuit93zs4c8gOQem0jNea3sy3N/cTxrtSWVnVfQE5xQ97L+v8AhwW1/wCv6Roaf4W1jVLEXdlaB4m3+WGmRHm2DLeWjMGkwOu0Gn6Z4U1TWI4jp32GVps7ITqNukpxnP7tnDdj2rtdA1bS49O8M38R01JtLDR3st7OvmWyrI0mYoCRvZw5+YBznGNpGa5izvLWx0zWNaSWNb28d7WygV18yJXyZJCo5HyHYD33nHSiWjdv67feC1S/r+rGZZ+GtVv9Oa9tbdHhCuwBnjWR1QZdkjLbnA7lQRwfQ1lV2vhXT10/RZNctrzTpNVmWSC0t5dSt4DbAgq0rh3BJwSFXHue2eLIwcUPewdLmhb6Dqd1o1zq0Nm5sLXHmzsQq/eC8ZPzYLLnGcZGcZpNN0PUdXhvJtOtjNHZRGa4fcqhFAJ7kZOATgc8Hjiuk8MW81x4S1yOa/sU+02aQWkVzqUEbZFwjsoV3BUcMeQAfxq/4Z1jw9Fo66a+o3lltsbprpWtYyk07xMuQ/nDcQuFVcDJzyN1D2foC1t6/wCRyen+FtY1SxF3ZWgeJt/lhpkR5tgy3lozBpMDrtBrIr1HQtW0iOx8N39s2nK+l7o7ue+mUS26LK0m6K33fOzhzyA5B6bSM15rezLc39xPGu1JZWdV9ATnFD3sv6/4cFtf+v6Res/DWq3+nNfWtujwhXcKZ41kdUGWKRlg7gdyoI4PoaW28N6jdaYmoJ9jitpCwRri/ghZ9vXCu4Y49hW/4V09dP0WTXLa806TVZlkgtLeXUreA2wIKtK4dwScEhVx7ntlfD4tbzSbS18R2+kDSIDMTdnUAt3CG6lIllyxyBgGM5+nND0bBbHP23hvUbrTE1BPscVtIWCNcX8ELPt64V3DHHsKya7bw+LS90m0tvENvpP9jwGY/a31DZeQq3UrEsuWOQMAxnP05rijjcducZ4zR1A1LPw1qt/pzX1rbo8IV3CmeNZHVBlikZYO4HcqCOD6Go7fQdTutGudWhs3Nha482diFX7wXjJ+bBZc4zjIzjNdJ4V09dP0WTXLa806TVZlkgtLeXUreA2wIKtK4dwScEhVx7ntlPDNtPP4T12KbULFPtFmkFpFc6nBG2RcI7KFdwVHDHkAH8aHuwXT1OdstB1C/snvIY4Y7ZGK+dc3EcCswGSqmRlDEDsuTyPUVm16Not9aTaB4eill0U2Fm00erRXohMwQyliUD/Oco3Bi5yOegx55Ls85/Jz5e47c9cdqHv/AF/XoHQ0rPw1qt/pzX1rbo8IV3CmeNZHVBlikZYO4HcqCOD6GotN0PUdXhvJtOtjNHZRGa4fcqhFAJ7kZOATgc8Hjiul8K6eun6LJrlteadJqsyyQWlvLqVvAbYEFWlcO4JOCQq49z2ze8M6x4ei0ddNfUbyy22N010rWsZSad4mXIfzhuIXCquBk55G6h6X9PxBa29f6/r+nxtvoOp3WjXOrQ2bmwtcebOxCr94Lxk/NgsucZxkZxms6u18N20k/hbXom1GyCXNosFlHd6jBC5xcI5Gx5MpwGbnjrgnNcWRg4o6gtvmaFvoOp3WjXOrQ2bmwtcebOxCr94Lxk/NgsucZxkZxmlstB1C/snvIY4Y7ZGK+dc3EcCswGSqmRlDEDsuTyPUV0Xhi3muPCWuRzX9in2mzSC0iudSgjbIuEdlCu4KjhjyAD+NaWi31pNoHh6KWXRTYWbTR6tFeiEzBDKWJQP85yjcGLnI56DDYLa/mcfbeG9RutMTUE+xxW0hYI1xfwQs+3rhXcMcewrJruND+xXum21trtvpI0SF5iLp9Q2XkCN1KxLLlmyBgGM5+nNcQcbjtzjPGaXUZp2Xh7UNRsmubJbeYKrN5K3kXnEKCWIi3bzgAnhegzUem6HqOrw3k2nWxmjsojNcPuVQigE9yMnAJwOeDxxXQ+C0isj9svxpcFrIsivftfqLu3UoVPlwiTJb0zGTzwR1Gl4Z1nw7Hoy6a2o3tkFsLprlWtI9s0zxMuQ5mBYhcKq4GTnkbqH19BLdepyVt4b1G60xNQT7HFbSFgjXF/BCz7euFdwxx7Csmu30EWd5pdrba/DpJ0WBpiLx74R3kKt1KwrLktkDAMbflzXEnG47c4zxmjqHQ1tP8LaxqliLuytA8Tb/ACw0yI82wZby0Zg0mB12g1Db6Dqd1o1zq0Nm5sLXHmzsQq/eC8ZPzYLLnGcZGcZrvtA1bS49O8M38R01JtLDR3st7OvmWyrI0mYoCRvZw5+YBznGNpGaytFWTUdB8SO17YwpfQCOygutSgiYf6SshUK7gqMbjyAD260PRtL+v+HBa2v5f18jnNP8LaxqliLuytA8Tb/LDTIjzbBlvLRmDSYHXaDWRXqGgarpcWn+Gb+I6Yk2lho72W8uF8y2VZGkzDBkeYzhz8wDnOMbSM15tezLc39xPGu1JZWdV9ATnFD0lZf1/wAOC2u/6/4Y0NP8LaxqliLuytA8Tb/LDTIjzbBlvLRmDSYHXaDUGm6HqOrw3k2nWxmjsojNcPuVQigE9yMnAJwOeDxxXf6Bq2lx6d4Zv4jpqTaWGjvZb2dfMtlWRpMxQEjezhz8wDnOMbSM1Fouv+G5bWa0F/e6ej2t5LcRvaRbZZpEYAh/NG4hSFVcDJzyN1EtL28/6+f9dwWtr+X9fI4ey0HUL+ye8hjhjtkYr51zcRwKzAZKqZGUMQOy5PI9RWbXo+j31jNofh+IzaM+m2bTJqkeoJCJxGZS2UV8vko3Hlc7hgngY87l2ec/k58vcdueuO1HUOho2Xh7UNRsmubJbeYKrN5K3kXnEKCWIi3bzgAnhegzS2fhrVb/AE5r61t0eEK7hTPGsjqgyxSMsHcDuVBHB9DW54LSKyP2y/GlwWsiyK9+1+ou7dShU+XCJMlvTMZPPBHUS+FdPXT9Gl1y1vNPk1SZZILS3m1K3gNsCCrTOHcHOCQq49z2yPS/p+ILoczpuh6jq8N5Np1sZo7KIzXD7lUIoBPcjJwCcDng8cVn16H4Z1jw9Fo66a+o3lltsbprpWtYyk07xMuQ/nDcQuFVcDJzyN1efOFEjCMlkz8pYYJH05xQ9HYFtc0rLw9qGo2TXNktvMFVm8lbyLziFBLERbt5wATwvQZp1t4b1G60xNQT7HFbSFgjXF/BCz7euFdwxx7CtvwWkVkftl+NLgtZFkV79r9Rd26lCp8uESZLemYyeeCOok8PC1vdIs7bxFBpH9kQGUm7bUNl5CG6lYllyxyBgGM5+nNDA5rTdD1HV4bybTrYzR2URmuH3KoRQCe5GTgE4HPB44rPr0Tw1rPh2PRxpp1G9slWxumuVe0j2zTPEy5DmYbiFwqrgZOeRurz1wokYRksmflLDBI+nOKHo7AtrmnZ+GtVv9Oa+tbdHhCu4UzxrI6oMsUjLB3A7lQRwfQ0ll4e1DUbJrmyW3mCqzeSt5F5xCgliIt284AJ4XoM10PhXT10/RZNctrzTpNVmWSC0t5dSt4DbAgq0rh3BJwSFXHue2WeDI4rJvtl/wD2XBausivftfqLu3UoVPlxCQkt6ZjY85BHUD0v6fiCMO28N6jdaYmoJ9jitpCwRri/ghZ9vXCu4Y49hWTXa+Hha3ukWdt4ig0j+yIDKTdtqGy8hDdSsSy5Y5AwDGc/TmuLONx25xnjNHUOhoW+g6ndaNc6tDZubC1x5s7EKv3gvGT82Cy5xnGRnGafZeHtQ1Gya5slt5gqs3kreRecQoJYiLdvOACeF6DNdB4Yt5rjwlrkc1/Yp9ps0gtIrnUoI2yLhHZQruCo4Y8gA/jTfBkcVk32y/8A7LgtXWRXv2v1F3bqUKny4hISW9MxsecgjqB9QW3zMTT/AAtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNZFeoaBq2lR6d4Zv4TpqS6WGjvJb2dfMtlWRpMxQEjezhz8wDnOMbSM15tezLc39xPGu1JZWdV9ATnFD0lb+v6YLa/8AX9Iu2Xh7UNRsmubJbeYKrN5K3kXnEKCWIi3bzgAnhegzS2fhrVb/AE5r61t0eEK7hTPGsjqgyxSMsHcDuVBHB9DW54LSKyP2y/GlwWsiyK9+1+ou7dShU+XCJMlvTMZPPBHUS+FdPXT9Gl1y1vNPk1SZZILS3m1K3gNsCCrTOHcHOCQq49z2yPS/p+ILoYemeFNU1iOI6d9hlabOyE6jbpKcZz+7Zw3Y9qxuldBo8tvpHh7UdSM8R1CcGytIkkBeMMP3spHUDb8gPfecdK56jqHQ1bPw1qt/pzX1rbo8IV3CmeNZHVBlikZYO4HcqCOD6GpdM8KaprEcR077DK02dkJ1G3SU4zn92zhux7Vt+FdPXT9Fk1y2vNOk1WZZILS3l1K3gNsCCrSuHcEnBIVce57Zy9Hlt9I8PajqRniOoTg2VpEkgLxhh+9lI6gbfkB77zjpQ9L/ANf10Bamdpuh6jq8N5Lp9sZo7KIzXD71UIoBPUkZOATgZJweOKz69D8Maz4ej0ZdNfUbyxC2F010rWkZWaZ4mXIcygsQuFVcDJzyN1efOFEjCMlkz8pYYJH05xQ9JWBaq42iiigDcg8Laxqkcl3ZWgeJ3k8oNMiPNs5by0Zg0mB12g1Fp/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67Qa7zR9W0tLbw7qER01JtLLx3st7OvmWyrK0mYoCRvZw5+YBznGNpGafpmuaRKug6tbDTYXsHkF297OvmWqCZpMxQZG9mDkbgHOcY2kZpvf8Ar7xLb+vuOA0/wtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNGn+FtY1SxF3ZWgeJt/lhpkR5tgy3lozBpMDrtBrv9M1zSJV0HVrYabC9g8gu3vZ18y1QTNJmKDI3swcjcA5zjG0jNGma5pEq6Dq1sNNheweQXb3s6+ZaoJmkzFBkb2YORuAc5xjaRml/X/BGcBp/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67QaistB1C/snvIY4Y7ZGK+dc3EcCswGSqmRlDEDsuTyPUV6JpmuaRKug6tbDTYXsHkF297OvmWqCZpMxQZG9mDkbgHOcY2kZqrY6rY6hp2isX0UabBNcf2pBfLD5yRtMz/IH+cko2AYucjB6DC/r+vIDitP8LaxqliLuytA8Tb/ACw0yI82wZby0Zg0mB12g1kV6louraOlp4c1C0/s6NtLLR3Ut9Ovm2yLK0mYoCRvZ1f7wDnPTaRmvNL2Zbm/uJ412pLKzqvoCc4pve39f0x9CCiiigQUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFAGxHobXOkXmry31rbQQ3BhVJRIXlcqWCrtQjoDyxA96x66aT/knN1/2Gl/8ART10Wh/2FfW3hu41XULWK7hRI0Mk4XyBDO8jbxnjchULnqelPq/l+VxJ+6vn+Zxln4a1W/05r61t0eEK7hTPGsjqgyxSMsHcDuVBHB9DUumeFNU1iOI6d9hlabOyE6jbpKcZz+7Zw3Y9q6LQrcRWt54kt7vT5NWvHmjtbebUoITbB8hpXEjgk4YhVx7ntnE0eW30jw9qOpGeI6hODZWkSSAvGGH72UjqBt+QHvvOOlTrb5fj/Vira/Mz4NA1S50e51WGzc2FrjzZyQq/eC8ZPzYLLnbnGRnrWdXaeGLea48Ja5HNf2KfabNILSK51KCNsi4R2UK7gqOGPIAP41t+A7ixsNO003OsBLeaWUX0B1SG3hQH5QssBUvPuHfoAQMjBIbF0+Z5hV270uaz02wvZWjMd8jvEFJ3AK5U549R2zXb+HNUitNBt7a61OzTU5PP/sedpQ39nZUg723YjDnhQfunL8A8v0PxCbFfCWnHVIYbQvMmpIsyBWUyv8srA8qQc4Jxzkdc0PsGyucnp3hifULSGeS9srH7U5jtEunZWuWHB27VIAzgbmKrnvwcVNQ0a60yzs7i62qLsSFY+dyFHKMGBHByD616XYR6WljaCZtJUvYqitfSQh0H2ZTGY/MOV/fPKSy45TBPQGEeLoZNd0JLXU44NMury6e9j8xUBje4chZf9kq2drcc5olo7IPs3Z5VRXpvh3WLKz8MaYLBRL5JmGoWZ1u3so7glj/rY5UzMpQqAQTjBHB5L/Atzp9lY6c8ureVaTzS/bbZtVht4Y1J2hJYGQvPuHfoAcZGCQPqB55pGmTazrFrp1q0aTXMgjRpCQoJ9cAn9KpkbWIPY16b4R1AWv8Awjr2OvWul6dC8h1SJr1YWll8w43pkGRShQA4KjByRzXmb8yNj1NHWwdxtFeoaHfXth4c8Ky/2nb2Wjp5z6hG9zGjTxiZ9yGMnfKCpICgEZasaPxfc6H4X0MaHcxRst3cS3FuCCWTepWOTB3FCM/LnB/CjrYOhxFXNO0/+0ZJ0+12tr5MDzZupdgfaM7F45Y9h3ru9C1NlttDksNWstP0mLedZs3uki80+YxfdCTumDRlVUAN0xxisvwjrV+b7UNOgv7xdK/s++ZbMzt5QHkyEZXOOuO3Wh6X+f4f1oNbr5HGUV6Z4b1izs/CulixXzTF5w1GzbW7eyjuGLHiWOVMyqUIAIJxgjg8nJtbu7Pg2zi8LatFpzh5zqMP9oJaSSEn5MlmUyLs4AGcHPAzyPS4lqcl9guf7L/tHy/9F87yPM3D7+3djHXp36Vcs/DWq3+nNfWtujwhXcKZ41kdUGWKRlg7gdyoI4Poa6PR9c1i48Avp2m+IZLS5trwMIpdTFt+4MZGFLuoI3D7oPccUzwrp66fosmuW15p0mqzLJBaW8upW8BtgQVaVw7gk4JCrj3PbI9L/wBdP8/60BdDn9M0NtV0+9uIL61jls4Wne2kEnmOi4yykIV79CwNT6b4R1TU9Jn1KIW0FpDG0gkurlIfMAYKdoYjPLAZ6Z4znip/CIx/bw/6g9x/Na6vwmyXXgGeDxQ2nto+9II5/tkSXFvGS8jYw24kMoYRspJzwMZIH+n6tAv1/RM8xopzhQ7BCSueCRgkV6H4e1ForHQWsNYtLHSYA/8AbNrLdJGZjvYvvhJ3TBoyqjAb04xR0B6HD6Rpk2s6xa6datGk1zII0aQkKCfXAJ/SqZG1iD2NeoeFtRit5tAk0vXLbSdKilkOowyXqwvI5kbaHTIMgKGMA4KjByRzXmD8yNj1NIfcbV270uaz02wvZWjMd8jvEFJ3AK5U549R2zTrabSUsJEvLK9luzny5YrxI4144yhiYnn/AGhn2613mgarPbaH4ZMWsWVrptq0rapC13EryR+cxKNFnzJAVJwuCPm980yTzSte18LazeNpotrJnOq7/sfzqPN2HDdT8uMd8etZk7I1xI0K7YyxKg9hniu/sfFMGmL4csR9nlRYrZjOJh/op89zKD6FkIBzjApx1S9Qlo3Y5KHwzqc1mbopbQQ7mVWuryGDzCvDbA7gvg8ZXPPFGn+GdV1OzW7toIlgd/Ljee5jh81+6pvYbz04XPUetdZaeVfO1n4hOj3Ggx3E5iuhqMSXVohZiWiVX3tz8wRkbPYDOadp6aVrbeHHmbS57C0hFje22oXwtWgAmLGZR5iFsq2eN3OQRnFStV/X9f1uVLRs4vTtC1LVobyXT7VpY7GIzXDFlURqASepGTgHgc8Hjis+vR9B1jw1FYPpseo3llEtneNOrWsZSaV42UEOZgWIXCqpAyc8jdXEW+lrdadqF7Hf2kSWezbDcSbJrgM2P3ac5I6nngetHX5Bb8zPor0zw3rFnZ+FdLFivmmLzhqNm2t29lHcMWPEscqZlUoQAQTjBHB5PmrlS7FF2qTwCc4H1pvR2EtrjaKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooA6vTLHxNcaJdQaZbW8un3UsjiKdLdnmZFO4wiT5ywUnmPkfWsvT/AAtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNd5o2raXHbeHb+I6ak2ll472W9nXzLZVlaTMUBI3s4c/MA5zjG0jNP0zXNIlXQdWthpsL2DyC7e9nXzLVBM0mYoMjezByNwDnOMbSM03v/X3+glt/X3HAaf4W1jVLEXdlaB4m3+WGmRHm2DLeWjMGkwOu0GjT/C2sapYi7srQPE2/wAsNMiPNsGW8tGYNJgddoNd/pmuaRKug6tbDTYXsHkF297OvmWqCZpMxQZG9mDkbgHOcY2kZo0zXNIlXQdWthpsL2DyC7e9nXzLVBM0mYoMjezByNwDnOMbSM0v6/4IzgNP8LaxqliLuytA8Tb/ACw0yI82wZby0Zg0mB12g0af4W1jVLEXdlaB4m3+WGmRHm2DLeWjMGkwOu0Gu/0zXNIlXQdWthpsL2DyC7e9nXzLVBM0mYoMjezByNwDnOMbSM0aZrmkSroOrWw02F7B5Bdvezr5lqgmaTMUGRvZg5G4BznGNpGaP6/4IHAaf4W1jVLEXdlaB4m3+WGmRHm2DLeWjMGkwOu0GsivVtM1zSJV0HVrYabC9g8gu3vZ18y1QTNJmKDI3swcjcA5zjG0jNeYXsy3N/cTxrtSWVnVfQE5xS1v/X9aj6HSaZB4r1Dw2sNlDBNZbJY4POS389lAzIsJf96RyciP1PqayLLw9qGo2TXNktvMFVm8lbyLziFBLERbt5wATwvQZru9A1bS49O8M38R01JtLDR3st7OvmWyrI0mYoCRvZw5+YBznGNpGayPDDwR6hPqd2ml2tncPMTevfqLu1RgwPlwiQndzxmMnngjqHLRv5/8D7xLZHM2Wg6hf2T3kMcMdsjFfOubiOBWYDJVTIyhiB2XJ5HqKza9G0W+s59A8PRSS6KdPtDMmqxXyw+cEMpclA/znKNwYucjB6DHnkuzzn8nPl7jtz1x2oe/9f16B0NKz8Narf6c19a26PCFdwpnjWR1QZYpGWDuB3Kgjg+hqO30HU7rRrnVobNzYWuPNnYhV+8F4yfmwWXOM4yM4zXSeFdPXT9Fk1y2vNOk1WZZILS3l1K3gNsCCrSuHcEnBIVce57ZTwzbTz+E9dim1CxT7RZpBaRXOpwRtkXCOyhXcFRwx5AB/Gh7sF09TJi0rXtZ0K3dESWzs45fs8ZliSQoCXkKISHcAkkkA4wfSsGu28K6cunaNLrdteadJqsqyW9pby6lbw/ZgQVaZw7gk4JCrj3PbPFEYOKHvYOhp2Xh7UNRsmubJbeYKrN5K3kXnEKCWIi3bzgAnhegzWhZN4kbwjeS2FtHFpUUfl3F1HbQxO6FwCvm7RI4yyggE9RnjFXfBaRWR+2X40uC1kWRXv2v1F3bqUKny4RJkt6ZjJ54I6h/hm2muPCeuRy6hYp9ps0gs4rnUoImyLhHKhXcFRwx5AB/Gh9UC3Xqc3puh6jq8N5Np1sZo7KIzXD7lUIoBPcjJwCcDng8cVn16H4Z1jw9Fo66a+o3lltsbprpWtYyk07xMuQ/nDcQuFVcDJzyN1efOFEjCMlkz8pYYJH05xQ9HYFtc07Pw1qt/pzX1rbo8IV3CmeNZHVBlikZYO4HcqCOD6Gnaf4W1jVLEXdlaB4m3+WGmRHm2DLeWjMGkwOu0Gt7wrp66fosmuW15p0mqzLJBaW8upW8BtgQVaVw7gk4JCrj3PbO3oGq6XFp/hm/iOmJNpYaO9lvLhfMtlWRpMwwZHmM4c/MA5zjG0jNPr/X9dhHIaUniGDwvqV1ptqi6WUKXVy1vFuKsVUqsjDeRkrkIeMgnGawhPMLc24lfyWcOY9x2lgCAcdM4J5967bRVk1HQfEjte2MKX0AjsoLrUoImH+krIVCu4KjG48gA9utcMRg4qd9yumnc0LfQdTutGudWhs3Nha482diFX7wXjJ+bBZc4zjIzjNSWfhrVb/TmvrW3R4QruFM8ayOqDLFIywdwO5UEcH0Nb/hi3muPCWuRzX9in2mzSC0iudSgjbIuEdlCu4KjhjyAD+NO8K6cunaNLrdteadJqsqyW9pby6lbw/ZgQVaZw7gk4JCrj3PbLeiYlr95z1n4a1W/wBOa+tbdHhCu4UzxrI6oMsUjLB3A7lQRwfQ1lV23hXTl07RpdbtrzTpNVlWS3tLeXUreH7MCCrTOHcEnBIVce57Z4ojBxQ97B0NOy8PahqNk1zZLbzBVZvJW8i84hQSxEW7ecAE8L0GadbeG9RutMTUE+xxW0hYI1xfwQs+3rhXcMcewrb8FpFZH7ZfjS4LWRZFe/a/UXdupQqfLhEmS3pmMnngjqJPDwtb3SLO28RQaR/ZEBlJu21DZeQhupWJZcscgYBjOfpzQwOa03Q9R1eG8m062M0dlEZrh9yqEUAnuRk4BOBzweOKz69E8Naz4dj0caadRvbJVsbprlXtI9s0zxMuQ5mG4hcKq4GTnkbq89cKJGEZLJn5SwwSPpzih6OwLa5q6f4W1jVLEXdlaB4m3+WGmRHm2DLeWjMGkwOu0GktvDeo3WmJqCfY4raQsEa4v4IWfb1wruGOPYV3OgatpceneGb+I6ak2lho72W9nXzLZVkaTMUBI3s4c/MA5zjG0jNZmlTWerW8a6/a6SmirNPILltQCXlurkk7YllyxyBgGM5+nNEtG7f1/wAOC2uc1p/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67QayK9Q0HVtKj0/w1fwHTUk0sNHeS3s6+ZbIsrSZigJG9nDn5gHOcY2kZrza9mW5v7ieNdqSys6r6AnOKHo7f1/TBbFq30HU7rRrnVobNzYWuPNnYhV+8F4yfmwWXOM4yM4zU2n+FtY1SxF3ZWgeJt/lhpkR5tgy3lozBpMDrtBrd8MW81x4S1yOa/sU+02aQWkVzqUEbZFwjsoV3BUcMeQAfxrc0DVdLi0/wzfxHTEm0sNHey3lwvmWyrI0mYYMjzGcOfmAc5xjaRmmLp/Xl/XyPP8ATdD1HV4bybTrYzR2URmuH3KoRQCe5GTgE4HPB44rPr0rRdf8Ny2s1oL+909HtbyW4je0i2yzSIwBD+aNxCkKq4GTnkbq83cKJGEZLJn5SwwSPpzip6/Irp8zTs/DWq3+nNfWtujwhXcKZ41kdUGWKRlg7gdyoI4PoaLPw1qt/pzX1rbo8IV3CmeNZHVBlikZYO4HcqCOD6Gug8K6eun6LJrlteadJqsyyQWlvLqVvAbYEFWlcO4JOCQq49z2yvhXTl07RpdbtrzTpNVlWS3tLeXUreH7MCCrTOHcEnBIVce57Zb0v6fiJa2OZ03Q9R1eG8m062M0dlEZrh9yqEUAnuRk4BOBzweOKz69D8M6x4ei0ddNfUbyy22N010rWsZSad4mXIfzhuIXCquBk55G6vPnCiRhGSyZ+UsMEj6c4oejsC2uX7fQdTutGudWhs3Nha482diFX7wXjJ+bBZc4zjIzjNPsvD2oajZNc2S28wVWbyVvIvOIUEsRFu3nABPC9Bmug8MW81x4S1yOa/sU+02aQWkVzqUEbZFwjsoV3BUcMeQAfxpvgyOKyb7Zf/2XBausivftfqLu3UoVPlxCQkt6ZjY85BHUD6gtvmYVn4a1W/05r61t0eEK7hTPGsjqgyxSMsHcDuVBHB9DWVXbeFdPXT9Gl1y1vNPk1SZZILS3m1K3gNsCCrTOHcHOCQq49z2zxRGDih72Dpc1tP8AC2sapYi7srQPE2/yw0yI82wZby0Zg0mB12g0lt4b1G60xNQT7HFbSFgjXF/BCz7euFdwxx7Cu50DVtLj07wzfxHTUm0sNHey3s6+ZbKsjSZigJG9nDn5gHOcY2kZrM0qaz1a3jXX7XSU0VZp5BctqAS8t1cknbEsuWOQMAxnP05olo3b+v8AhwW1zmtP8LaxqliLuytA8Tb/ACw0yI82wZby0Zg0mB12g1kV6hoOraVHp/hq/gOmpJpYaO8lvZ18y2RZWkzFASN7OHPzAOc4xtIzXm17Mtzf3E8a7UllZ1X0BOcUPR2/r+mC2NDT/C2sapYi7srQPE2/yw0yI82wZby0Zg0mB12g0lt4b1G60xNQT7HFbSFgjXF/BCz7euFdwxx7Cu50DVtLj07wzfxHTUm0sNHey3s6+ZbKsjSZigJG9nDn5gHOcY2kZrM0qaz1a3jXX7XSU0VZp5BctqAS8t1cknbEsuWOQMAxnP05olo3b+v+HBbXOXsvD2oajZNc2S28wVWbyVvIvOIUEsRFu3nABPC9Bmsuuy8GJDZN9svf7MgtHEitfvfqLy3QoVPlwiQkt6ZjY88EdRx30o6h0NSz8Narf6c19a26PCFdwpnjWR1QZYpGWDuB3Kgjg+hqLTdD1HV4bybTrYzR2URmuH3KoRQCe5GTgE4HPB44rpfCunrp+iya5bXmnSarMskFpby6lbwG2BBVpXDuCTgkKuPc9s3vDOseHotHXTX1G8sttjdNdK1rGUmneJlyH84biFwqrgZOeRuoel/T8QWtvX+v6/p8lbeG9RutMTUE+xxW0hYI1xfwQs+3rhXcMcewrJrt9BFneaXa22vw6SdFgaYi8e+Ed5CrdSsKy5LZAwDG35c1xJxuO3OM8Zo6h0NC30HU7rRrnVobNzYWuPNnYhV+8F4yfmwWXOM4yM4zSaboeo6vDeTadbGaOyiM1w+5VCKAT3IycAnA54PHFdJ4Yt5rjwlrkc1/Yp9ps0gtIrnUoI2yLhHZQruCo4Y8gA/jV/wzrHh6LR1019RvLLbY3TXStaxlJp3iZch/OG4hcKq4GTnkbqHs/QFrb1/yOQsvD2oajZNc2S28wVWbyVvIvOIUEsRFu3nABPC9Bmsuuz8HRwWUhvLs6bFZuJVOoSXyreW6FSpMcIkJ3emY2PPB7jjfpR1Doadl4e1DUbJrmyW3mCqzeSt5F5xCgliIt284AJ4XoM02y0HUL+ye8hjhjtkYr51zcRwKzAZKqZGUMQOy5PI9RW/4LSKyP2y/GlwWsiyK9+1+ou7dShU+XCJMlvTMZPPBHUaui31nPoHh6KSXRTp9oZk1WK+WHzghlLkoH+c5RuDFzkYPQYGBx1n4a1W/05r61t0eEK7hTPGsjqgyxSMsHcDuVBHB9DWVXceGtPi0/S59csLvT5NRm82Cyt59St4GtlIKmVw7gk4JCrj3PbPEEYOKOo+hqWfhrVb/AE5r61t0eEK7hTPGsjqgyxSMsHcDuVBHB9DTLLQdQv7J7yGOGO2RivnXNxHArMBkqpkZQxA7Lk8j1FdH4V09dP0WTXLa806TVZlkgtLeXUreA2wIKtK4dwScEhVx7ntnR0W+tJtA8PRSy6KbCzaaPVor0QmYIZSxKB/nOUbgxc5HPQYH2F0ucdZ+GtVv9Oa+tbdHhCu4UzxrI6oMsUjLB3A7lQRwfQ1lV3HhrT4tP0ufXLC70+TUZvNgsrefUreBrZSCplcO4JOCQq49z2zxBGDijqPoJRRRQI27fwtrGpxPd2VoHiZ5BGGmRHm2ct5aMwaTA67Qaj0/wtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNd7pGraWkHh7UIjpqS6Wzx3st7OvmWyrK0mYoCRvZw5+YBznGNpGadpmuaRKug6tbDTYXsHkF297OvmWqCZpMxQZG9mDkbgHOcY2kZpvf+vvEtv6+44DT/C2sapYi7srQPE2/yw0yI82wZby0Zg0mB12g0af4W1jVLEXdlaB4m3+WGmRHm2DLeWjMGkwOu0Gu/wBM1zSJV0HVrYabC9g8gu3vZ18y1QTNJmKDI3swcjcA5zjG0jNGma5pEq6Dq1sNNheweQXb3s6+ZaoJmkzFBkb2YORuAc5xjaRml/X/AARnAaf4W1jVLEXdlaB4m3+WGmRHm2DLeWjMGkwOu0Gm2fhrVb/TmvrW3R4QruFM8ayOqDLFIywdwO5UEcH0Neg6ZrmkSroOrWw02F7B5Bdvezr5lqgmaTMUGRvZg5G4BznGNpGaxdBtY4LS88RWVzp7aldPNHZWs2pW8BtVbKtK4dwc4JCrj3PbK1t/Xy+8en9f10Oa0/wtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNZFeoaBqulxaf4Zv4jpiTaWGjvZby4XzLZVkaTMMGR5jOHPzAOc4xtIzXm17Mtzf3E8a7UllZ1X0BOcU3pKy/r/AIcS2u/6/wCGL1n4a1W/05r61t0eEK7hTPGsjqgyxSMsHcDuVBHB9DUdvoOp3WjXOrQ2bmwtcebOxCr94Lxk/NgsucZxkZxmuk8K6eun6LJrlteadJqsyyQWlvLqVvAbYEFWlcO4JOCQq49z2ynhm2nn8J67FNqFin2izSC0iudTgjbIuEdlCu4KjhjyAD+ND3YLp6mBZ+GtVv8ATmvrW3R4QruFM8ayOqDLFIywdwO5UEcH0NZVdt4V05dO0aXW7a806TVZVkt7S3l1K3h+zAgq0zh3BJwSFXHue2eKIwcUPewdDUs/DWq3+nNfWtujwhXcKZ41kdUGWKRlg7gdyoI4PoaW28N6jdaYmoJ9jitpCwRri/ghZ9vXCu4Y49hW/wCFdPXT9Fk1y2vNOk1WZZILS3l1K3gNsCCrSuHcEnBIVce57ZXw+LW80m0tfEdvpA0iAzE3Z1ALdwhupSJZcscgYBjOfpzQ9GwWxzOm6HqOrw3k2nWxmjsojNcPuVQigE9yMnAJwOeDxxWfXonhrWfDsejjTTqN7ZKtjdNcq9pHtmmeJlyHMw3ELhVXAyc8jdXnrhRIwjJZM/KWGCR9OcUPR2BbXL9voOp3WjXOrQ2bmwtcebOxCr94Lxk/NgsucZxkZxmptP8AC2sapYi7srQPE2/yw0yI82wZby0Zg0mB12g1u+GLea48Ja5HNf2KfabNILSK51KCNsi4R2UK7gqOGPIAP41uaBqulxaf4Zv4jpiTaWGjvZby4XzLZVkaTMMGR5jOHPzAOc4xtIzTF0/ry/r5Hn+m6HqOrw3k2nWxmjsojNcPuVQigE9yMnAJwOeDxxWfXpWi6/4bltZrQX97p6Pa3ktxG9pFtlmkRgCH80biFIVVwMnPI3V5u4USMIyWTPylhgkfTnFT1+RXT5mnZ+GtVv8ATmvrW3R4QruFM8ayOqDLFIywdwO5UEcH0NS6Z4U1TWI4jp32GVps7ITqNukpxnP7tnDdj2rb8K6eun6LJrlteadJqsyyQWlvLqVvAbYEFWlcO4JOCQq49z2zl6PLb6R4e1HUjPEdQnBsrSJJAXjDD97KR1A2/ID33nHSm9L/ANf10EtTPg0DVLnR7nVYbNzYWuPNnJCr94Lxk/NgsuducZGetZ1dp4Yt5rjwlrkc1/Yp9ps0gtIrnUoI2yLhHZQruCo4Y8gA/jXGEYOKOoLVXNbT/C2sapYi7srQPE2/yw0yI82wZby0Zg0mB12g0lt4b1G60xNQT7HFbSFgjXF/BCz7euFdwxx7Cu50DVtLj07wzfxHTUm0sNHey3s6+ZbKsjSZigJG9nDn5gHOcY2kZrM0qaz1a3jXX7XSU0VZp5BctqAS8t1cknbEsuWOQMAxnP05olo3b+v+HBbXOUt9B1O60a51aGzc2FrjzZ2IVfvBeMn5sFlzjOMjOM1nV2nhm2luPCmuxyahYoLmzSCziutSgibIuEcqFdwVHDHkAH8a4wjBxR1Dp8zW0/wtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNRWWg6hf2T3kMcMdsjFfOubiOBWYDJVTIyhiB2XJ5HqK73QNW0uPTvDN/EdNSbSw0d7Lezr5lsqyNJmKAkb2cOfmAc5xjaRmmWOq2OoadorF9FGmwTXH9qQXyw+ckbTM/yB/nJKNgGLnIwegwPR2X9efoC2ucVp/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67QayK9S0XVtHS08Oahaf2dG2llo7qW+nXzbZFlaTMUBI3s6v8AeAc56bSM15pezLc39xPGu1JZWdV9ATnFD3t/X9MfQu2Xh7UNRsmubJbeYKrN5K3kXnEKCWIi3bzgAnhegzTLfQdTutGudWhs3Nha482diFX7wXjJ+bBZc4zjIzjNdB4LSKyP2y/GlwWsiyK9+1+ou7dShU+XCJMlvTMZPPBHUP8ADNtNceE9cjl1CxT7TZpBZxXOpQRNkXCOVCu4KjhjyAD+NDEunqYWn+FtY1SxF3ZWgeJt/lhpkR5tgy3lozBpMDrtBrIr1DQNV0uLT/DN/EdMSbSw0d7LeXC+ZbKsjSZhgyPMZw5+YBznGNpGa82vZlub+4njXaksrOq+gJzih6Ssv6/4cFtd/wBf8MaGn+FtY1SxF3ZWgeJt/lhpkR5tgy3lozBpMDrtBp+meFNU1iOI6d9hlabOyE6jbpKcZz+7Zw3Y9q7XQNW0uPTvDN/EdNSbSw0d7Lezr5lsqyNJmKAkb2cOfmAc5xjaRmuYs7y1sdM1jWkljW9vHe1soFdfMiV8mSQqOR8h2A995x0olo3b+u33gtUv6/qxl2Xh3UdRs2ubJbaYKrN5K3kPnEKCWIi3bzgAnhegzWXXY+C0isj9svxpcFrIsivftfqLu3UoVPlwiTJb0zGTzwR1HH/Sh72Doadl4e1DUbJrmyW3mCqzeSt5F5xCgliIt284AJ4XoM0WXh7UNRsmubJbeYKrN5K3kXnEKCWIi3bzgAnhegzW74LSKyP2y/GlwWsiyK9+1+ou7dShU+XCJMlvTMZPPBHUL4MSKyP2y+/suC1dZFe/e/UXdupQqfLhEhO70zGx54I6gel/QEYdt4b1G60xNQT7HFbSFgjXF/BCz7euFdwxx7Csmu18PC1vdIs7bxFBpH9kQGUm7bUNl5CG6lYllyxyBgGM5+nNcWcbjtzjPGaOodDQt9B1O60a51aGzc2FrjzZ2IVfvBeMn5sFlzjOMjOM1JZ+GtVv9Oa+tbdHhCu4UzxrI6oMsUjLB3A7lQRwfQ1v+GLea48Ja5HNf2KfabNILSK51KCNsi4R2UK7gqOGPIAP407wrpy6do0ut215p0mqyrJb2lvLqVvD9mBBVpnDuCTgkKuPc9sj0TBa/ec9Z+GtVv8ATmvrW3R4QruFM8ayOqDLFIywdwO5UEcH0NZVdt4V05dO0aXW7a806TVZVkt7S3l1K3h+zAgq0zh3BJwSFXHue2eKIwcUPewdDW0/wtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNGn+FtY1SxF3ZWgeJt/lhpkR5tgy3lozBpMDrtBruNA1bS49O8M38R01JtLDR3st7OvmWyrI0mYoCRvZw5+YBznGNpGan0zXNIlXQdWthpsL2DyC7e9nXzLVBM0mYoMjezByNwDnOMbSM03v/AF94lt/X3Hn9t4b1G60xNQT7HFbSFgjXF/BCz7euFdwxx7Csmu80qaz1a3jXX7XSU0VZp5BctqAS8t1cknbEsuWOQMAxnP05rhDjcducZ4zUq/Uo0LfQdTutGudWhs3Nha482diFX7wXjJ+bBZc4zjIzjNSWfhrVb/TmvrW3R4QruFM8ayOqDLFIywdwO5UEcH0Nb/hi3muPCWuRzX9in2mzSC0iudSgjbIuEdlCu4KjhjyAD+NO8K6cunaNLrdteadJqsqyW9pby6lbw/ZgQVaZw7gk4JCrj3PbLeiYlr95zOm6HqOrw3k2nWxmjsojNcPuVQigE9yMnAJwOeDxxWfXofhnWPD0Wjrpr6jeWW2xumula1jKTTvEy5D+cNxC4VVwMnPI3V584USMIyWTPylhgkfTnFD0dgW1zSsvD2oajZNc2S28wVWbyVvIvOIUEsRFu3nABPC9BmnW3hvUbrTE1BPscVtIWCNcX8ELPt64V3DHHsK2/BaRWR+2X40uC1kWRXv2v1F3bqUKny4RJkt6ZjJ54I6iTw8LW90iztvEUGkf2RAZSbttQ2XkIbqViWXLHIGAYzn6c0MDnLLQdQv7J7yGOGO2RivnXNxHArMBkqpkZQxA7Lk8j1FZtejaLfWc+g+Honl0U6faNMmqxX6w+cEMpclA/wA5JRuDFzkc9BjzyXZ5z+Tny9x25647UPf+v69A6GjZeHtQ1Gya5slt5gqs3kreRecQoJYiLdvOACeF6DNNstB1C/snvIY4Y7ZGK+dc3EcCswGSqmRlDEDsuTyPUVv+C0isj9svxpcFrIsivftfqLu3UoVPlwiTJb0zGTzwR1Grot9Zz6B4eikl0U6faGZNVivlh84IZS5KB/nOUbgxc5GD0GBgcVb6Dqd1o1zq0Nm5sLXHmzsQq/eC8ZPzYLLnGcZGcZrOrtvDtu9x4Y1+P7fZJHc2qwWMV3qUEbcXCuV2u4K8BjyADz61xRGDigfT5mpZ+GtVv9Oa+tbdHhCu4UzxrI6oMsUjLB3A7lQRwfQ1Fpuh6jq8N5Np1sZo7KIzXD7lUIoBPcjJwCcDng8cV0vhXT10/RZNctrzTpNVmWSC0t5dSt4DbAgq0rh3BJwSFXHue2b3hnWPD0Wjrpr6jeWW2xumula1jKTTvEy5D+cNxC4VVwMnPI3UPS/p+Ilrb1/r+v6fLaZ4U1TWI4jp32GVps7ITqNukpxnP7tnDdj2rG6V0Wky2ukaBqWppcI17Pmyso9yiRFYfvJSoJK/J8o/3zjpXOUdQ6GrZ+GtVv8ATmvrW3R4QruFM8ayOqDLFIywdwO5UEcH0NR2+g6ndaNc6tDZubC1x5s7EKv3gvGT82Cy5xnGRnGa6Twrp66fosmuW15p0mqzLJBaW8upW8BtgQVaVw7gk4JCrj3PbKeGbaefwnrsU2oWKfaLNILSK51OCNsi4R2UK7gqOGPIAP40Pdgunqc7ZaDqF/ZPeQxwx2yMV865uI4FZgMlVMjKGIHZcnkeorNr0bRb60m0Dw9FLLopsLNpo9WivRCZghlLEoH+c5RuDFzkc9BjzyXZ5z+Tny9x25647UPf+v69A6DKKKKANu28LaxqkL3dlaB4neTyw0yI82zlvLRmDSYHXaDUen+FtY1SxF3ZWgeJt/lhpkR5tgy3lozBpMDrtBrvNG1bS47bw7fxHTUm0svHey3s6+ZbKsrSZigJG9nDn5gHOcY2kZp+ma5pEq6Dq1sNNheweQXb3s6+ZaoJmkzFBkb2YORuAc5xjaRmm9/6+8S2/r7jgNP8LaxqliLuytA8Tb/LDTIjzbBlvLRmDSYHXaDRp/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67Qa7/AEzXNIlXQdWthpsL2DyC7e9nXzLVBM0mYoMjezByNwDnOMbSM0aZrmkSroOrWw02F7B5Bdvezr5lqgmaTMUGRvZg5G4BznGNpGaX9f8ABGcBp/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67Qag03Q9R1eG8m062M0dlEZrh9yqEUAnuRk4BOBzweOK9G0zXNIlXQdWthpsL2DyC7e9nXzLVBM0mYoMjezByNwDnOMbSM1T0XX/DctrNaC/vdPR7W8luI3tItss0iMAQ/mjcQpCquBk55G6lrZ/P+vn/AF3H1XyOM0/wtrGqWIu7K0DxNv8ALDTIjzbBlvLRmDSYHXaDWRXqOhatpEdj4bv7ZtOV9L3R3c99Molt0WVpN0Vvu+dnDnkByD02kZrzW9mW5v7ieNdqSys6r6AnOKb3sv6/4cS2v/X9Iu2Xh7UNRsmubJbeYKrN5K3kXnEKCWIi3bzgAnhegzUem6HqOrw3k2nWxmjsojNcPuVQigE9yMnAJwOeDxxXQ+C0isj9svxpcFrIsivftfqLu3UoVPlwiTJb0zGTzwR1Gl4Z1nw7Hoy6a2o3tkFsLprlWtI9s0zxMuQ5mBYhcKq4GTnkbqH19AW69Tk9P8LaxqliLuytA8Tb/LDTIjzbBlvLRmDSYHXaDWRXqOhatpEdj4bv7ZtOV9L3R3c99Molt0WVpN0Vvu+dnDnkByD02kZrzW9mW5v7ieNdqSys6r6AnOKHvZf1/wAOC2v/AF/SNDT/AAtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNP0zwpqmsRxHTvsMrTZ2QnUbdJTjOf3bOG7HtXa6Bq2lx6d4Zv4jpqTaWGjvZb2dfMtlWRpMxQEjezhz8wDnOMbSM1zFneWtjpmsa0ksa3t472tlArr5kSvkySFRyPkOwHvvOOlEtG7f12+8Fql/X9WMyz8Narf6c17a26PCFdgDPGsjqgy7JGW3OB3Kgjg+hrKrtfCunrp+iya5bXmnSarMskFpby6lbwG2BBVpXDuCTgkKuPc9s8WRg4oe9g6XNC30HU7rRrnVobNzYWuPNnYhV+8F4yfmwWXOM4yM4zSaboeo6vDeTadbGaOyiM1w+5VCKAT3IycAnA54PHFdJ4Yt5rjwlrkc1/Yp9ps0gtIrnUoI2yLhHZQruCo4Y8gA/jV/wzrHh6LR1019RvLLbY3TXStaxlJp3iZch/OG4hcKq4GTnkbqHs/QFrb1/wAjk9P8LaxqliLuytA8Tb/LDTIjzbBlvLRmDSYHXaDWRXqOhatpEdj4bv7ZtOV9L3R3c99Molt0WVpN0Vvu+dnDnkByD02kZrzW9mW5v7ieNdqSys6r6AnOKHvZf1/w4La/9f0i9Z+GtVv9Oa+tbdHhCu4UzxrI6oMsUjLB3A7lQRwfQ0tt4b1G60xNQT7HFbSFgjXF/BCz7euFdwxx7Ct/wrp66fosmuW15p0mqzLJBaW8upW8BtgQVaVw7gk4JCrj3PbK+Hxa3mk2lr4jt9IGkQGYm7OoBbuEN1KRLLljkDAMZz9OaHo2C2OftvDeo3WmJqCfY4raQsEa4v4IWfb1wruGOPYVk123h8Wl7pNpbeIbfSf7HgMx+1vqGy8hVupWJZcscgYBjOfpzXFHG47c4zxmjqBqWfhrVb/TmvrW3R4QruFM8ayOqDLFIywdwO5UEcH0NR2+g6ndaNc6tDZubC1x5s7EKv3gvGT82Cy5xnGRnGa6Twrp66fosmuW15p0mqzLJBaW8upW8BtgQVaVw7gk4JCrj3PbKeGbaefwnrsU2oWKfaLNILSK51OCNsi4R2UK7gqOGPIAP40Pdgunqc7ZaDqF/ZPeQxwx2yMV865uI4FZgMlVMjKGIHZcnkeorNr0bRb60m0Dw9FLLopsLNpo9WivRCZghlLEoH+c5RuDFzkc9BjzyXZ5z+Tny9x25647UPf+v69A6GlZ+GtVv9Oa+tbdHhCu4UzxrI6oMsUjLB3A7lQRwfQ1Fpuh6jq8N5Np1sZo7KIzXD7lUIoBPcjJwCcDng8cV0vhXT10/RZNctrzTpNVmWSC0t5dSt4DbAgq0rh3BJwSFXHue2b3hnWPD0Wjrpr6jeWW2xumula1jKTTvEy5D+cNxC4VVwMnPI3UPS/p+ILW3r/X9f0+Nt9B1O60a51aGzc2FrjzZ2IVfvBeMn5sFlzjOMjOM1nV2vhu2kn8La9E2o2QS5tFgso7vUYIXOLhHI2PJlOAzc8dcE5riyMHFHUFt8zQt9B1O60a51aGzc2FrjzZ2IVfvBeMn5sFlzjOMjOM0tloOoX9k95DHDHbIxXzrm4jgVmAyVUyMoYgdlyeR6iui8MW81x4S1yOa/sU+02aQWkVzqUEbZFwjsoV3BUcMeQAfxrS0W+tJtA8PRSy6KbCzaaPVor0QmYIZSxKB/nOUbgxc5HPQYbBbX8zj7bw3qN1piagn2OK2kLBGuL+CFn29cK7hjj2FZNdxof2K9022ttdt9JGiQvMRdPqGy8gRupWJZcs2QMAxnP05riDjcducZ4zS6jNOy8PahqNk1zZLbzBVZvJW8i84hQSxEW7ecAE8L0Gaj03Q9R1eG8m062M0dlEZrh9yqEUAnuRk4BOBzweOK6HwWkVkftl+NLgtZFkV79r9Rd26lCp8uESZLemYyeeCOo0vDOs+HY9GXTW1G9sgthdNcq1pHtmmeJlyHMwLELhVXAyc8jdQ+voJbr1OStvDeo3WmJqCfY4raQsEa4v4IWfb1wruGOPYVk12+gizvNLtbbX4dJOiwNMRePfCO8hVupWFZclsgYBjb8ua4k43HbnGeM0dQ6Ghb6Dqd1o1zq0Nm5sLXHmzsQq/eC8ZPzYLLnGcZGcZp9l4e1DUbJrmyW3mCqzeSt5F5xCgliIt284AJ4XoM10Hhi3muPCWuRzX9in2mzSC0iudSgjbIuEdlCu4KjhjyAD+NN8GRxWTfbL/wDsuC1dZFe/a/UXdupQqfLiEhJb0zGx5yCOoH1BbfM53TdD1HV4bybTrYzR2URmuH3KoRQCe5GTgE4HPB44rPr0PwzrPh2PRl01tRvbILYXTXKtaR7ZpniZchzMCxC4VVwMnPI3V584USMIyWTPylhgkfTnFD0lYFqrl+30HU7rRrnVobNzYWuPNnYhV+8F4yfmwWXOM4yM4zUln4a1W/05r61t0eEK7hTPGsjqgyxSMsHcDuVBHB9DW/4Yt5rjwlrkc1/Yp9ps0gtIrnUoI2yLhHZQruCo4Y8gA/jTvCunLp2jS63bXmnSarKslvaW8upW8P2YEFWmcO4JOCQq49z2yPRMFr95h6Z4U1TWI4jp32GVps7ITqNukpxnP7tnDdj2rG6V0Gjy2+keHtR1IzxHUJwbK0iSQF4ww/eykdQNvyA995x0rnqOodDUsvD2oajZNc2S28wVWbyVvIvOIUEsRFu3nABPC9Bmiy8PahqNk1zZLbzBVZvJW8i84hQSxEW7ecAE8L0Ga3fBaRWR+2X40uC1kWRXv2v1F3bqUKny4RJkt6ZjJ54I6hfBiRWR+2X39lwWrrIr3736i7t1KFT5cIkJ3emY2PPBHUD0v6AjndN0PUdXhvJtOtjNHZRGa4fcqhFAJ7kZOATgc8Hjis+vQ/DOs+HY9GXTW1G9sgthdNcq1pHtmmeJlyHMwLELhVXAyc8jdXnzhRIwjJZM/KWGCR9OcUPSVgWquaVl4e1DUbJrmyW3mCqzeSt5F5xCgliIt284AJ4XoM0y30HU7rRrnVobNzYWuPNnYhV+8F4yfmwWXOM4yM4zXQeC0isj9svxpcFrIsivftfqLu3UoVPlwiTJb0zGTzwR1D/DNtNceE9cjl1CxT7TZpBZxXOpQRNkXCOVCu4KjhjyAD+NDBdPUwLPw1qt/pzX1rbo8IV3CmeNZHVBlikZYO4HcqCOD6Gsqu28K6cunaNLrdteadJqsqyW9pby6lbw/ZgQVaZw7gk4JCrj3PbPFEYOKHvYOhqWfhrVb/TmvrW3R4QruFM8ayOqDLFIywdwO5UEcH0NR2+g6ndaNc6tDZubC1x5s7EKv3gvGT82Cy5xnGRnGa6Twrp66fosmuW15p0mqzLJBaW8upW8BtgQVaVw7gk4JCrj3PbKeGbaefwnrsU2oWKfaLNILSK51OCNsi4R2UK7gqOGPIAP40PdgunqYNt4b1G60xNQT7HFbSFgjXF/BCz7euFdwxx7Csmu28Pi1vNJtLXxHb6QNIgMxN2dQC3cIbqUiWXLHIGAYzn6c1xRxuO3OM8Zo6h0NC30HU7rRrnVobNzYWuPNnYhV+8F4yfmwWXOM4yM4zUtt4b1G60xNQT7HFbSFgjXF/BCz7euFdwxx7Ct7wxbzXHhLXI5r+xT7TZpBaRXOpQRtkXCOyhXcFRwx5AB/GneHxa3mk2lr4jt9IGkQGYm7OoBbuEN1KRLLljkDAMZz9OaGC2+ZzVvoOp3WjXOrQ2bmwtcebOxCr94Lxk/NgsucZxkZxms6u08M20tx4U12OTULFBc2aQWcV1qUETZFwjlQruCo4Y8gA/jXGEYOKOodPmaln4a1W/05r61t0eEK7hTPGsjqgyxSMsHcDuVBHB9DRZ+GtVv9Oa+tbdHhCu4UzxrI6oMsUjLB3A7lQRwfQ10HhXT10/RZNctrzTpNVmWSC0t5dSt4DbAgq0rh3BJwSFXHue2V8K6cunaNLrdteadJqsqyW9pby6lbw/ZgQVaZw7gk4JCrj3PbI9L+n4gtbHM6boeo6vDeTadbGaOyiM1w+5VCKAT3IycAnA54PHFZ9eh+GdY8PRaOumvqN5ZbbG6a6VrWMpNO8TLkP5w3ELhVXAyc8jdXnzhRIwjJZM/KWGCR9OcUPR2BbXL9voOp3WjXOrQ2bmwtcebOxCr94Lxk/NgsucZxkZxmn2Xh7UNRsmubJbeYKrN5K3kXnEKCWIi3bzgAnhegzXQeGLea48Ja5HNf2KfabNILSK51KCNsi4R2UK7gqOGPIAP403wZHFZN9sv/wCy4LV1kV79r9Rd26lCp8uISElvTMbHnII6gfUFt8zE0/wtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNZFeoaBq2lR6d4Zv4TpqS6WGjvJb2dfMtlWRpMxQEjezhz8wDnOMbSM15tezLc39xPGu1JZWdV9ATnFD0lb+v6YLa/9f0iCiiigDbtvC2sapC93ZWgeJnk8sNMiPNs5by0Zg0mB12g1Hp/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67Qa7zRtW0uO28O38R01JtLLx3st7OvmWyrK0mYoCRvZw5+YBznGNpGafpmuaRKug6tbDTYXsHkF297OvmWqCZpMxQZG9mDkbgHOcY2kZpvf+vvEtv6+44DT/AAtrGqWIu7K0DxNv8sNMiPNsGW8tGYNJgddoNGn+FtY1SxF3ZWgeJt/lhpkR5tgy3lozBpMDrtBrv9M1zSJV0HVrYabC9g8gu3vZ18y1QTNJmKDI3swcjcA5zjG0jNGma5pEq6Dq1sNNheweQXb3s6+ZaoJmkzFBkb2YORuAc5xjaRml/X/BGcBp/hbWNUsRd2VoHibf5YaZEebYMt5aMwaTA67QaistB1C/snvIY4Y7ZGK+dc3EcCswGSqmRlDEDsuTyPUV6JpmuaRKug6tbDTYXsHkF297OvmWqCZpMxQZG9mDkbgHOcY2kZqrY6rY6hp2isX0UabBNcf2pBfLD5yRtMz/ACB/nJKNgGLnIwegwv6/ryA4rT/C2sapYi7srQPE2/yw0yI82wZby0Zg0mB12g1kV6louraOlp4c1C0/s6NtLLR3Ut9Ovm2yLK0mYoCRvZ1f7wDnPTaRmvNL2Zbm/uJ412pLKzqvoCc4pve39f0x9CCiiigQUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFAEk/wDx8Sf75/nUdFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFAH//Z)Figure 5.6: Output of the “od -b” command to show byte octal differences between MSG1.e and MSG4.e displays the octal difference between the very closely related MSG1 and MSG4 files using the “od -b” command.

Figure .6: Output of the “od -b” command to show byte octal differences between MSG1.e and MSG4.e.

MSG1 and MSG4 differ only by one bit at the end of each message: “1986” versus “1984”. The result shows a difference of 8 bytes between the encrypted output versions. The bytes affected are at position 41 through 48 in the command output. This is a demonstration of the property of diffusion, which states that a small change in input to an encryption mechanism should create a large change in output. Here, the difference of one bit between MSG1 and MSG4 resulted in changes to an entire block of ciphertext.

# Summary of Functionality

In summation, our project is designed to implement DES encryption in CBC mode with PKCS#5 padding. Our implementation uses only a single file that swaps between encryption and decryption based on a flag provided with the execution command.

Encryption mode implements the following functionality:

* Open the specified files for input and output.
* Read the input file into a buffer for processing the plaintext.
* Pad the input in PKCS#5 style, adding enough bytes to raise the size of the input to the next multiple of eight, with each byte containing a value that reports the number of bytes added.
* Set a hardcoded key and IV contained in the source code.
* Process each block of plaintext through an XOR operation that uses the IV on the first round and the previous block of ciphertext on each subsequent round.
* Encrypt the result of the XOR operation to produce the ciphertext.
* Output the ciphertext to the designated file.

Decryption mode implements the following functionality:

* Open the specified files for input and output.
* Read the input file into a buffer for processing the ciphertext.
* Set a hardcoded key and IV contained in the source code.
* Decrypt each block of the ciphertext.
* Process each block of output from the decryption method with an XOR operation, first with the IV and then with the previous block of ciphertext on each subsequent round.
* Remove padding from the plaintext produced by reading the last byte’s value and excising that many bytes from the plaintext.
* Output the resulting plaintext to the designated file.