

The original code has been modified as stated below:

Task 1

Take user input for their **Full Name** as well as their **Birth Month**. User would have to enter 1 for Full Name Conversion and 2 for Birth Month conversion. The string entered (1 or 2) was converted to Int using 'int.parse' method.

```
Console.Write("What would you like to convert? Enter '1' for name and '2' for birth month: ");
choice = Console.ReadLine();

// Converting User's Choice into int
if (int.Parse(choice) == 1)
    opt = name;
else
    opt = month;
```

Used a do while loop to encase the **Program.cs** code to allow to user to restart the program from the console itself by entering 'y'

```
do
{
    Console.WriteLine("Assignment 1 BDAT 1001-01 Shubham Chawla 200493036");

    Console.Write("\nPress any key to exit or 'y' to perform another conversion: ");
    yesNo = Console.ReadLine().ToLower();

} while (yesNo.Equals("y"));
```

Task 2 – Binary Encoding and Decoding

Modifications were done to the loop structure from foreach to for. Used String Array indexing.

```
for (int i=0; i < option.Length; i++) // Modification in the for loop
{
    string binarycollector = "";
    int number = (int)option[i]; // Used stringarray for indexing instead of character
```

Task 3 – Hexadecimal Encoding and Decoding

Modifications were done to the loop structure from foreach to for. Used String Array indexing.

```
public string StringToHexadecimal(string option)
{
    string hexastring = "";
    for(int i = 0; i < option.Length; i++) //Modification
    {
        int x = (int)option[i]; //Modification
```

Task 4 – Base64 Encoding and Decoding

Ternary Operator was used instead of standard if-else ladder, which reduced the size of the code.

```
paddingCount = (stringlength % 3) == 0 ? 0 : 3 - (stringlength % 3); // Modification - Used a Ternary Operator
blockCount = (stringlength % 3) == 0 ? stringlength / 3 : (stringlength + paddingCount) / 3;
```

Used ternary operator again to minimize the code lines.

```
, return ((b >= 0) && (b <= 63)) ? lookupTable[(int)b] : ' '; //Modification
```

Task 5 – Encryption and Decryption

Used Unicode Encoding method.

```
Console.WriteLine("\n4. Encryption and Decryption\n");
int[] key = Encoding.Unicode.GetBytes(plaintext).Select(x => Convert.ToInt32(x)).ToArray(); //Used Unicode here
```

Output Full Name and Birth Month Conversion in continuation.

Input1: Shubham Chawla, Input2: April

User chose full name conversion in the first case by entering '1' and then they entered 'y' to perform another conversion where they chose birth month conversion by entering '2'. The output is in continuation.

```
C:\Users\shubh\Desktop\VS_C#\Assignment1_DataSecurityEncodingEncryptionPrivacy\Assignment1_DataSecurityEncodingEncryptionPrivacy\bin\Debug\net6.0\Assignment1_DataSecurityEncodingEncryptionPrivacy.exe
Assignment 1 BDAT 1001-01 Shubham Chawla 200493036

Please enter your full name: Shubham Chawla
Please enter your birth month: April
What would you like to convert? Enter '1' for name and '2' for birth month: 1

1. Binary Encoding and Decoding
  Binary Value for Shubham Chawla is: 0101001101101000011101010110001001101000011000010110110010000001000011011010000110000101110110110110001100001
  String Value for 0101001101101000011101010110001001101010010000001000011011010000110000101110110110110001100001 is :Shubham Chawla

2. Hexadecimal Encoding and Decoding
  Hexadecimal Value for Shubham Chawla is: 5368756268616D20436861776C61
  String Value for 5368756268616D20436861776C61 is: Shubham Chawla

3. Base64 Encoding and Decoding
  Base 64 Value for Shubham Chawla is: U2h1YmhhbSB0aGF3bGE=
  Base64 Value for U2h1YmhhbSB0aGF3bGE= is: Shubham Chawla

4. Encryption and Decryption

  This is the single level encryption:

  Encrypted once using the cipher {83,0,104,0,117,0,98,0,104,0,97,0,109,0,32,0,67,0,104,0,97,0,119,0,108,0,97,0} DēĀDAU@?DA10A
  Decrypted once using the cipher {83,0,104,0,117,0,98,0,104,0,97,0,109,0,32,0,67,0,104,0,97,0,119,0,108,0,97,0} Shubham Chawla

  This is the deep level encryption:

  Deep Encrypted 15 times using the cipher {83,0,104,0,117,0,98,0,104,0,97,0,109,0,32,0,67,0,104,0,97,0,119,0,108,0,97,0} 0?P ?>D0?>pa~
  Deep Decrypted 15 times using the cipher {83,0,104,0,117,0,98,0,104,0,97,0,109,0,32,0,67,0,104,0,97,0,119,0,108,0,97,0} ShubhamChawla

Press any key to exit or 'y' to perform another conversion: y
Assignment 1 BDAT 1001-01 Shubham Chawla 200493036

Please enter your full name: Shubham Chawla
Please enter your birth month: April
What would you like to convert? Enter '1' for name and '2' for birth month: 2

1. Binary Encoding and Decoding
  Binary Value for April is: 0100000101110000011100100110100101101100
  String Value for 0100000101110000011100100110100101101100 is :April

2. Hexadecimal Encoding and Decoding
  Hexadecimal Value for April is: 417072696C
  String Value for 417072696C is: April

3. Base64 Encoding and Decoding
  Base 64 Value for April is: QXB0YXN0=
  Base64 Value for QXB0YXN0= is: April

4. Encryption and Decryption

  This is the single level encryption:

  Encrypted once using the cipher {65,0,112,0,114,0,105,0,108,0} ?āS00
  Decrypted once using the cipher {65,0,112,0,114,0,105,0,108,0} April

  This is the deep level encryption:

  Deep Encrypted 15 times using the cipher {65,0,112,0,114,0,105,0,108,0} ▶ ?A
  Deep Decrypted 15 times using the cipher {65,0,112,0,114,0,105,0,108,0} Aril

Press any key to exit or 'y' to perform another conversion: y
Assignment 1 BDAT 1001-01 Shubham Chawla 200493036

Please enter your full name: 
```