Hashing

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Encryption

- Used to protect information
- First known - 1900 BC
- First military use - 100 BC
- WWII - Enigma Machine
- 1970 - IBM

Problem Space

- Data and data protection are incredibly important
- Simple way to encrypt messages
- Brainstormed different types of hashing
- Decided upon Ascii due to size constraints

Encrypted Communication using Hashing

- After discussing our problem space as a team, we decided to create a program that will encrypt and decrypt messages using hashing
- It allows you to enter a word and it will output the ascii value, as well as enter an ascii value and it will output the corresponding word

Walkthrough of Code

```
#include <iostream>
#include <string>

using namespace std;

void Convert(int arr[], char str[], int x)
{
    int i;
    for(i = 0; i < x; i++)
    {
        str[i] = char(arr[i]);
    }
}

void Switch(int arr[], char str[], int x)
{
   int i;
   for (i = 0; i < x; i++)
   {
        arr[i] = int(str[i]);
   }

}
```

Walkthrough of Code

```
int main()
{
    int type;
    cin >> type;

    int arr[50];
    int x = 50;
    char str[50];

    int user, i = 0, size = 0;

    if (type == 2)
    {
        while(user != 250)
        {
            cin >> user;
            arr[i] = user;
            i++;
            size++;
        }
        Convert(arr,str,x);

        for(i = 0; i < size-1; i++)
        {
            cout << str[i];
        }
        cout << endl;

    }


    else if (type == 1)
    {
        string message;
        cin >> message;
        int l = message.length();
        for(i = 0; i < l; i++)
        {
            str[i] = message[i];
        }

        Switch(arr,str,x);

        for(i = 0; i < l; i++)
        {
            cout << arr[i] << " ";
        }
        cout << endl;
    }
}
```

Using the Code

```
Jakes-MacBook-Air:Hash jakelorah$ cat input.txt
1 super top secret message!
Jakes-MacBook-Air:Hash jakelorah$ ./a.out < input.txt > result.txt
Jakes-MacBook-Air:Hash jakelorah$ cat result.txt
32 115 117 112 101 114 32 116 111 112 32 115 101 99 114 101 116 32 109 101 115 115 97 103 101 33
Jakes-MacBook-Air:Hash jakelorah$
```

Using the Code

```
Jakes-MacBook-Air:Hash jakelorah$ cat input.txt
2 104 97 44 32 121 111 117 32 99 97 110 39 116 32 115 101 101 32 109 121 32 109 101 115 115 97 103 101 33 250
Jakes-MacBook-Air:Hash jakelorah$ ./a.out < input.txt > result.txt
Jakes-MacBook-Air:Hash jakelorah$ cat result.txt
ha, you can't see my message!
Jakes-MacBook-Air:Hash jakelorah$
```

Final Analysis

- When we sat down as a group at the beginning phase of this project, we wanted to have a program that took in a word and outputted the corresponding Ascii
- As we were building our project space and constructing our code, we decided to have it both ways where you can input a word and the Ascii gets outputted, as well as inputting Ascii and having the word being outputted
- This worked out really well and we successfully worked as a team and created a program to do both the encryption and decryption part
- There were no major issues that we ran into

Thank you for your time