**LABORATORY 01**

**NAME: HARSH PARMAR**

**YORK STD. ID.: 218220038**

**PROBLEM 1**

Pre: Enter a String.

Post: The Reverse of the string has been outputted using recursion.

|  |  |  |
| --- | --- | --- |
| **Call #** | **s** | **s[0]** |
| 1 | CSisFUN | C |
| 2 | SisFUN | S |
| 3 | isFUN | i |
| 4 | sFUN | s |
| 5 | FUN | F |
| 6 | UN | U |
| 7 | N |  |

|  |
| --- |
| **Returned value** |
| NUFsiSC |
| NUFsiS |
| NUFsi |
| NUFs |
| NUF |
| NU |
| N |

**Time**

**PROBLEM 2**

Pre: Enter a Number that represents natural numbers.

Post: Number of 7's in the number is outputted using recursion.

|  |  |  |
| --- | --- | --- |
| **Call #** | **n** | **Isd** |
| 1 | 237577 | 7 |
| 2 | 23757 | 7 |
| 3 | 2375 | 5 |
| 4 | 237 | 7 |
| 5 | 23 | 3 |
| 6 | 2 | 2 |

|  |
| --- |
| **Returned value** |
| 3 |
| 2 |
| 1 |
| 1 |
| 0 |
| 0 |

**Time**

**PROBLEM 3**

Pre: Enter 2 Numbers that represents whole numbers.

Post: Multiplication of both numbers is outputted using recursion and without using \* operation.

|  |  |  |
| --- | --- | --- |
| **Call #** | **m** | **n** |
| 1 | 5 | 6 |
| 2 | 5 | 5 |
| 3 | 5 | 4 |
| 4 | 5 | 3 |
| 5 | 5 | 2 |
| 6 | 5 | 1 |
| 7 | 5 | 0 |

|  |
| --- |
| **Returned value** |
| 30 |
| 25 |
| 20 |
| 15 |
| 10 |
| 5 |
| 0 |

**Time**

**PROBLEM 4**

Pre: Enter a number to find in Array.

Post: Whether the number input is present in the array or not is outputted as "Yes" or "No" respectively.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Call #** | **x** | **i** | **j** | **mid** |
| 1 | 123 | 0 | 19 | 9 |
| 2 | 123 | 10 | 19 | 14 |
| 3 | 123 | 10 | 14 | 12 |
| 4 | 123 | 13 | 14 | 13 |
| 5 | 123 | 13 | 13 | 13 |

|  |
| --- |
| **Returned value** |
| find(123, A, 10, 19) |
| find(123, A, 10, 14) |
| find(123, A, 13, 14) |
| find(123, A, 13, 13) |
| True |

**Time**