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COURSE: BSC(H) COMPUTER SCIENCE

DESIGN AND ANALYSIS OF

ALGORITHM

LINEAR SEARCH PROBLEM

## **Taking Different Inputs:**

- $n = 10$

Input = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}

Keys to be searched = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

BEST CASE: 1 comparison

WORST CASE: 10 comparisons

AVERAGE CASE:  $(1+2+3+4+5+6+7+8+9+10+10)/11 = 5.90909090909091$

- $n = 15$

Input = {2, 7, 9, 18, 82, 45, 99, 11, 47, 56, 87, 55, 49, 61, 33}

Keys to be searched =

2, 7, 9, 18, 82, 45, 99, 11, 47, 56, 87, 55, 49, 61, 33, 96

BEST CASE: 1 comparison

WORST CASE: 15 comparisons

AVERAGE CASE:

$$(1+2+3+4+5+6+7+8+9+10+11+12+13+14+15+15)/16 = 8.4375$$

- $n = 20$

Input = {41, 52, 36, 47, 58, 9, 69, 15, 24, 92, 72, 82, 46, 31, 49, 78, 89, 73, 99, 22}

Keys to be searched = 41, 52, 36, 47, 58, 9, 69, 15, 24, 92, 72, 82, 46, 31, 49, 78, 89, 73, 99, 22, 999

BEST CASE: 1 comparison

WORST CASE: 20 comparisons

AVERAGE CASE:

$$(1+2+3+4+5+6+7+8+9+10+11+12+13+14+15+15+16+17+18+19+20+20)/21 = 10.952380952381$$