Computing Fibonacci Numbers with and without Dynamic Programming

Chapter 1

File Index

1.1 File List

Here is a list of all files with brief descriptions:

Chapter 2

File Documentation

2.1 fibonacci.c File Reference

```
#include <stdio.h>
#include <time.h>
```

Functions

- int fibSeq1 (int n)
- int fibSeq2Helper (int n, int fibArr[ ])
- int fibSeq2 (int n)
- int main ()

2.1.1 Detailed Description

Remarks

computation and timing of elements of the Fibonnaci sequence * using the basic recurisve formula for the sequence * with and without dynamic prog. *

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Author

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Date

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Remarks

References *

Dynamic Programming: Anany Levitin, "The Design and * and Analysis of Algorithms", Second Edition, * Chapter 8: Dynamic Programming *

Dynamic Programming: Anany Levitin, "The Design and * and Analysis of Algorithms", Second Edition, * Section 2.5: Example: Computing the nth Fibonacci Number *

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People participating with Problem/Progra Discussions: * None *

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2.1.2 Function Documentation

2.1.2.1 fibSeq1()

```
int fibSeq1 (
            int n )
```
compute the nth fibonacci number directly, ∗ using the recursive definition of the sequence ∗

Parameters

n	the nth Fibonacci number to be computed ∗ (starting the sequence at index 0) ∗

Precondition

> 0 <= n ∗

Returns

> the nth Fibonacci number ∗

2.1.2.2 fibSeq2()

```
int fibSeq2 (
            int n )
```
compute the nth fibonacci number, ∗ using the recursive definition and dynamic programming ∗

Parameters

n	the nth Fibonacci number to be computed ∗ (starting the sequence at index 0) ∗

Precondition

> 0 <= n ∗

Returns

> the nth Fibonacci number ∗

2.1.2.3 fibSeq2Helper()

```
int fibSeq2Helper (
            int n,
            int fibArr[] )
```
helper function to compute the nth fibonacci number, ∗ using the recursive definition and dynamic programming ∗

Parameters

n	the nth Fibonacci number to be computed ∗ (starting the sequence at index 0) ∗
fibArr	an initialize array, recording ∗ Fibonacci numbers already computed ∗

Precondition

> 0 <= n <= 1 + length of fibArr array ∗

Returns

the nth Fibonacci number *

2.1.2.4 main()

```
int main ( )
```
main procedure controls computation, timing, and printing *

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