

MSMS 105 : Practical

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➡ Question

For $n = \{5, 10, 15, 20, 25, 30\}$ calculate the value of

$$\sqrt{1 + 2\sqrt{1 + 3\sqrt{1 + 4\sqrt{1 + 5\sqrt{1 + \dots\sqrt{1 + (n-1)\sqrt{1+n}}}}}}}$$

.

➡ R Program

```
nested_square_root <- function(n){  
  
  result <- sqrt(1 + n)  
  
  for(i in (n-1):2){  
    result <- sqrt(1 + i * result)  
  }  
  
  return(result)  
}
```

```
nested_square_root(5)
```

```
## [1] 2.755053
```

```
nested_square_root(10)
```

```
## [1] 2.98992
```

```
nested_square_root(15)
```

```
## [1] 2.999643
```

```
nested_square_root(20)
```

```
## [1] 2.999988
```

```
nested_square_root(25)
```

```
## [1] 3
```

```
nested_square_root(30)
```

```
## [1] 3
```