

# CE103 Algorithms and Programming I

## Week-4

### Introduction to Code Reusability and Automated Testing

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# Outline

- Introduction to Code Reusability and Automated Testing
- Shared Library Development
  - C
  - C++
  - C#
  - Java
- Unit Testing
  - C
  - C++
  - C#
  - Java
- Continuous Integration Platforms

# Introduction to Code Reusability and Automated Testing

## Introduction to Code Reusability and Automated Testing

- During this course, we will use entry-level shared library development and their tests and test automation. Also, we will see TDD(Test Driven Development) approach.

## Sample Images-1

- **Selected Development Environment**

During this course, we will use Windows OS, Eclipse and Visual Studio Community Edition environments for examples.



## Sample Images-2

- Each example will include two function

Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s,





## Sample Images-3

- **What is Lorem Ipsum?**  
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## Sample Images-4

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1

iSwin

12

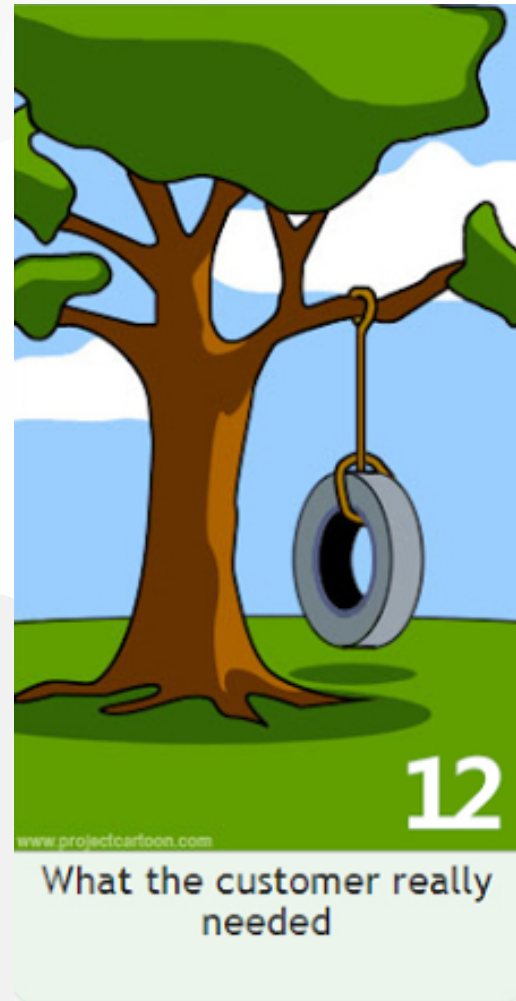
projectcartoon.com

projectcartoon.com

that marketing advertisement that the customer really needed

## Sample Images-5

- **What is Lorem Ipsum?**  
Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s,



## Sample Images-6

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compute  $m[i, i + 1]$   
 $\{m[1, 2], m[2, 3], \dots, m[n - 1, n]\}$   
 (n-1) values

for  $i = 1$  to  $n - 1$  do  
 $m[i, i + 1] = \infty$  (1)  
 for  $k = i$  to  $i$  do  
 $\vdots$

compute  $m[i, i + 2]$   
 $\{m[1, 3], m[2, 4], \dots, m[n - 2, n]\}$   
 (n-2) values

$\ell = 3$   
 for  $i = 1$  to  $n - 2$  do  
 $m[i, i + 2] = \infty$  (1)  
 for  $k = i$  to  $i + 1$  do  
 $\vdots$

compute  $m[i, i + 3]$   
 $\{m[1, 4], m[2, 5], \dots, m[n - 3, n]\}$   
 (n-3) values

$\ell = 4$   
 for  $i = 1$  to  $n - 3$  do  
 $m[i, i + 3] = \infty$  (1)  
 for  $k = i$  to  $i + 2$  do

$$c[i, i - 1] \leftarrow 0$$

$$c[i, i] \leftarrow p[i]$$

$$R[i, j] \leftarrow i$$

$$PS[1] \leftarrow p[1] \Leftarrow PS[i] \rightarrow \text{prefix-sum } (i) : \text{Sum of all } p[j] \text{ values for } j \leq i$$

for  $i \leftarrow 2$  to  $n$  do

$$PS[i] \leftarrow p[i] + PS[i - 1] \Leftarrow \text{compute the prefix sum}$$

for  $d \leftarrow 1$  to  $n - 1$  do  $\Leftarrow$  BSTs with  $d + 1$  consecutive keys

for  $i \leftarrow 1$  to  $n - d$  do

$$j \leftarrow i + d$$

$$c[i, j] \leftarrow \infty$$

for  $r \leftarrow i$  to  $j$  do

$$q \leftarrow \min\{c[i, r - 1] + c[r + 1, j]\} + PS[j] - PS[i - 1]$$

if  $q < c[i, j]$  then

$$c[i, j] \leftarrow q$$

**TODO UPDATE CONTENT FOR YOUR COURSE NOTES**

## References

- <https://avesis.erdogan.edu.tr/ugur.coruh>
- <https://www.linkedin.com/in/ugurcoruh/>
- <https://www.hindawi.com/journals/scn/2018/6563089/>
- <https://dl.acm.org/doi/abs/10.1145/3410352.3410836>
- <https://www.sciencedirect.com/science/article/abs/pii/S2214212621002623>

*End – Of – Week – 1 – Module*