CSD2181/2183 – Data Structure

Exercises

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Introduction – Data Structure Exercises

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- Purpose: to reinforce what you have learned and practiced in lectures.
- The exercise session is conducted face to face in class.
- It consists of a few MCQs to be solved within class.
- Limited time is given for each question (answer will be discussed afterwards).
- You are required to login to ClassPoint with your student ID.
- So, bring along your laptop or devices with Internet access.
- Attendance is compulsory and there is no make up.
- Exercises are marked considering your overall performance in the module.

Introduction – Data Structure Exercises

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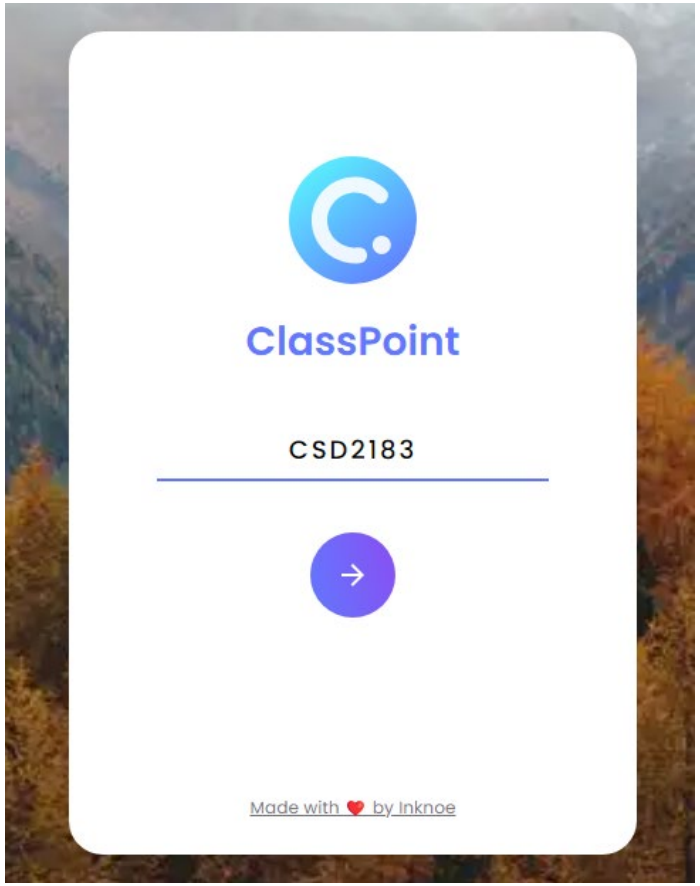
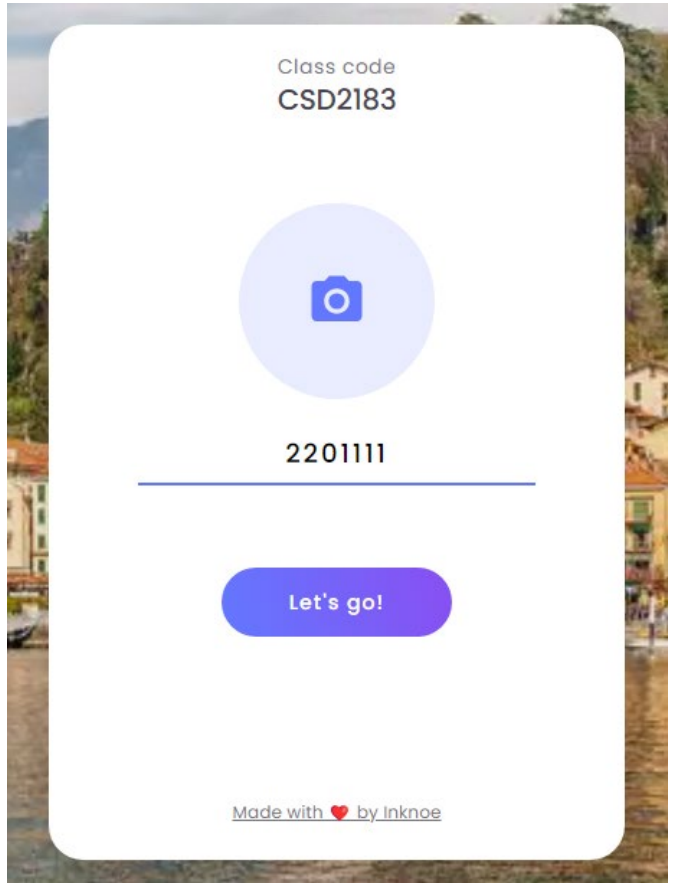
https://www.classpoint.app/





OR

URL
classpoint.app

Class code
CSD2183

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Exercise 2
Algorithm Analysis

Exercise 2 – Algorithm Analysis

2.1 What is the time complexity of do()?

A. O(1)
B. O(logn)
C. O(n)
D. O(nlogn)
E. $O(n^2)$
F. $O(n^3)$

Multiple Choice

```
void op(int size){
    for (int i=0; i<size; ++i){
        int fa = 888;
    }
}

void do(){
    for (int i=0; i<n; ++i){
        for (int j=0; j<n; ++j){
            op(n);
        }
    }
}
```

Exercise 2 – Algorithm Analysis

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2.2 What is the time complexity of do()?

A. O(1)
B. O(logn)
C. O(n)
D. O(nlogn)
E. $O(n^2)$
F. $O(n^3)$

Multiple Choice

```
void op(int size){
    for (int i=0; i<size; ++i){
        int fa = 888;
    }
}

void do(){
    for (int i=0; i<n; ++i){
        for (int j=0; j<n; ++j){
            op(n);
            op(8);
        }
    }
}
```

Exercise 2 – Algorithm Analysis

2.3 What is the time complexity of do()?

A. O(1)
B. O(logn)
C. O(n)
D. O(nlogn)
E. $O(n^2)$
F. $O(n^3)$

Multiple Choice

```
void op(int size){
    for (int i=0; i<size; ++i){
        int fa = 888;
    }
}

void do(){
    if (/* some random conditional */) {
        op(n);
    }
    else {
        op(881);
    }
}
```

Exercise 2 – Algorithm Analysis

2.4 What is the time complexity of do()?

A. O(1)
B. O(logn)
C. O(n)
D. O(nlogn)
E. $O(n^2)$
F. $O(n^3)$

Multiple Choice

```
void op(int size){
    for (int i=0; i<size; ++i){
        int fa = 888;
    }
}

void do(){
    if (/* some random conditional */) {
        op(n*n);
    }
    else if (/* some random conditional2 */){
        op(881);
    }
}
```

Exercise 2 – Algorithm Analysis

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2.5 What is the time complexity of do()?

A. O(1)
B. O(logn)
C. O(n)
D. O(nlogn)
E. $O(n^2)$
F. $O(n^3)$

Multiple Choice

```
void op(int size){
    for (int i=0; i<size; ++i){
        int fa = 888;
    }
}

void do(){
    if (/* some random conditional */) {
        op(n*n);
    }
    else if (/* some random conditional2 */){
        op(n);
    }
}
```

Exercise 2 – Algorithm Analysis

2.6 What is the time complexity of do()?

A. O(1)
B. O(logn)
C. O(n)
D. O(nlogn)
E. $O(n^2)$
F. $O(n^3)$

Multiple Choice

```
void op(int size){
    for (int i=0; i<size; ++i){
        int fa = 888;
    }
}

void do(){
    for (int i=0; i<n; i*=2){
        op(8);
    }
}
```

Exercise 2 – Algorithm Analysis

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2.7 What is the time complexity of do()?

A. O(1)
B. O(logn)
C. O(n)
D. O(nlogn)
E. $O(n^2)$
F. $O(n^3)$

Multiple Choice

```
void op(int size){
    for (int i=0; i<size; ++i){
        int fa = 888;
    }
}

void do(){
    for (int i=0; i<n; i*=2){
        op(n);
    }
}
```

Exercise 2 – Algorithm Analysis

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2.8 What is the time complexity of do()?

A. O(1)
B. O(logn)
C. O(n)
D. O(nlogn)
E. $O(n^2)$
F. $O(n^3)$

Multiple Choice

```
void op(int size){
    for (int i=0; i<size; ++i){
        int fa = 888;
    }
}

void do(){
    for (int i=0; i<n; i*=3){
        op(8);
    }
}
```

Exercise 2 – Algorithm Analysis

2.9 What is the time complexity of do()?

A. O(1)
B. O(logn)
C. O(n)
D. O(nlogn)
E. $O(n^2)$
F. $O(n^3)$

Multiple Choice

```
void op(int size){
    for (int i=0; i<size; ++i){
        int fa = 888;
    }
}

void do(){
    for (int i=0; i<n; ++i){
        for (int j=0; j<n; j*=a){
            op(8);
        }
    }
}
```

Exercise 2 – Algorithm Analysis

2.10 What is the time complexity of do()?

A. O(1)
B. O(logn)
C. O(n)
D. O(nlogn)
E. $O(n^2)$
F. $O(n^3)$

Multiple Choice

```
void op(int size){
    for (int i=0; i<size; ++i){
        int fa = 888;
    }
}

void do(){
    for (int i=0; i<n; ++i){
        for (int j=i; j<n; ++j){
            op(8);
        }
    }
}
```

Exercise 2 – Algorithm Analysis

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```
int main() {
    int n = 100;
    for (int i=1; i<=n; i*=2) {
        for (int j=1; j<=i; j++)
        cout<<i*j<<endl;
    }
```

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The End