

I.T.U.
Faculty of Computer and Informatics
Computer Engineering



Lesson name: Computer Communication

Lesson Code: BLG 433E

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What This Report Includes?

- **Introduction**
- **Classes**
- **Explanation**
- **Efficiency Analysis**

Introduction

I've used Microsoft Visual Studio 2010 compiler to compile my codes. I wrote my project in C++ language with object oriented approach.

In this homework, FDM(frequency division multiplexing), TDM(time division multiplexing) and CDM(code division multiplexing) is implemented and their advantages and disadvantages are learnt.

Classes

- **Station**

Station class is hold characters, which are read from input files, in the transmitDatas vector. CDMChip vector variable in this class is required in the CDM for each station.

```
class Station{
private:
public:
    const static int fqBand = 64;    // 64 kHz fq band
    vector<char> transmitDatas;
    int CDMChip[64];
};
```

- **Transmission**

Transmission class is needed for holding the variables after multiplexing the transmitted data from station. Variable frequencyInterval is added for determining each station's frequency interval in FDM. Vector type of 'c' variable is used for keeping all transmitted data. Transmit array is used as a sum vector of CDM.

Bandwidth variable is static and given in the homework description.

```
class Transmission{
private:
public:
    const static int BANDWIDTH = 4096;    // 4096 kHz fq band
    vector<int> frequencyInterval;
    vector<char> c;
    int transmit[64];
};
```

Explanation

In the project source code, there are a lot of comments in the necessary parts. I call FDM firstly and FDM multiplexing operation will call FDM demultiplexing and TDM and TDM demultiplexing and similar for CDM.

Efficiency Analysis

Efficiency is calculated as

$E = \text{Amount of data sent in the corresponding time interval} / \text{Max amount of data that line can transmit}$

I gave the output for efficiency of TDM and FDM in my project.