Ankara Yıldırım Beyazıt University
CENG 206 Programming Languages

PROJECT – 2 REPORT 2(FINAL)

GROUP NO: 21

Name & Surname: Emin Şimşek
Student Id: 17050111033

Name & Surname: Emre Aktaş
Student Id: 17050111007

Name & Surname: Halil İbrahim Seçer
Student Id: 17050111009

Name & Surname: Ali Emre Ayaz
Student Id: 17050111028

Name & Surname: Enver Köroğlu
Student Id: 17050111003

ALGORITHM OF PROGRAM:

Program Start

Read information from files (courses, service) and from user (classrooms,busy) via GUI.

Creating Objects of Classes Course and Classroom into separate vectors by using that information and inserting busy and service information into separate string vectors. Then, assign service and busy information into course and classroom objects accordingly.

Sorting the course vector according to service courses coming first and elective courses coming last, then assign them to a new vector.

To add service courses, go to all service courses and check for the status (compulsory or elective) then check for a big/small class. Assign false value for the day and time for chosen classes in the days vector and add year of the courses to chosen classroom's morning/afternoon string vectors. Last, set course's classroomname.

To add busy courses, If the course has busy time, then go to all the time slots in a nested for loop, check for overlap and busy time, if that time is available, then assign a big/small class according to status(C/E).Add the year of the course to the classroom's day's morning or afternoon string vector. Last, set course classroomname, day and time, and assign false value in the classroom' day object' bool field for the chosen time.

To add mandatory courses to the schedule, pass the busy courses, and check for the day and time availability by looking emptiness of the big classes at that time and calling a function which checks for overlap. Then, assign date, time, classroom to course object, and add year of the course to that day's time's string vector in the big classroom object and assign false to bool field of chosen day time.

To add elective courses to schedule, pass the busy courses, go to all the time slots using nested loops, check for overlap, then search an available big/small classroom according to status(C/E). Then, assign date, time, classroom to course object, and add year of the course to that day's time's string vector in the classroom object and assign false to bool field of chosen day time.

Print out the schedule in order of days and times.

SCREENSHOTS OF REQUESTED FEATURES AND OUTPUTS:

FEATURES:

1. Exception Handling:

```cpp
int readFile(ifstream& file, vector< vector <string> > &vect, int x=3)
{
    try
    {
        if(!file.good())
            throw -1;
        while(file.good())
        {
            vector <string> temp;
            string line;
            getline (file, line); // burda exceldeki satiri direk aliyor ; lü halini
            stringstream str (line);
            string val;
            for (int i = 0; i < x; i++)
            {
                getline (str, val, ';'); // burda o aldigimiz satiri ; ile ayirarak eleman eleman aliyoz
                temp.push_back (val); // tek satirlik vectore atiyoz
            }
            vect.push_back (temp); // burda da o tek satirlik vectorü iki boyutlu vektöre atiyoz

        }

        file.close ();
        return vect.size();
    }catch(int a)
    {
        cout << "Error When Opening The File. Error Code : " << a << endl;
        return -1;
    }

}
```

2. Default Parameter:

```cpp
Day(std::string name,bool morning=true,bool afternoon=true);
```

3. Operator Overloading: used for comparing two course objects

```cpp
bool operator== ( Course c1,  Course c2)
{

    return (c1.getCourseCode()== c2.getCourseCode() && c1.getCourseName()== c2.getCourseName());
}
```

4. Inline Function:

```cpp
inline bool sortCompulsory( Course &lhs,  Course &rhs) { return lhs.getStatus() < rhs.getStatus(); }
inline  bool  MainWindow::isOverlap(std::string day,std::string time,std::string year)
{

    for(int i=0;i<(int)allClassrooms->size();i++)
    {
        if(!allClassrooms->at(i).isYearAvailable(day,time,year))
            return true;
    }
    return false;
}
```
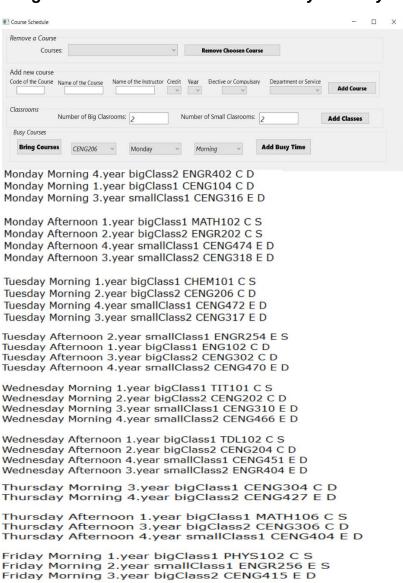
5. Constructor/Destructor:

```cpp
Classroom::Classroom(std::string x,std::string y)
{
    this->classroomName=x;
    this->ClassroomType=y;

    this->days.push_back(Day("Monday"));
    this->days.push_back(Day("Tuesday"));
    this->days.push_back(Day("Wednesday"));
    this->days.push_back(Day("Thursday"));
    this->days.push_back(Day("Friday"));


}

Classroom::~Classroom()
{
    cout<<"Object is deleted!"<<endl;
}
```

6. Vectors:

```cpp
vector<Classroom> allClassrooms;
vector<Course> allCourses;

std::vector< std::vector<std::string> > busyTimes;
```

OUTPUTS:

2 Big 2 Small Classroom and added busy times by hand according to given file.

Monday Morning 4.year bigClass2 ENGR402 C D
Monday Morning 1.year bigClass1 CENG104 C D
Monday Morning 3.year smallClass1 CENG316 E D

Monday Afternoon 1.year bigClass1 MATH102 C S
Monday Afternoon 2.year bigClass2 ENGR202 C S
Monday Afternoon 4.year smallClass1 CENG474 E D
Monday Afternoon 3.year smallClass2 CENG318 E D

Tuesday Morning 1.year bigClass1 CHEM101 C S
Tuesday Morning 2.year bigClass2 CENG206 C D
Tuesday Morning 4.year smallClass1 CENG472 E D
Tuesday Morning 3.year smallClass2 CENG317 E D

Tuesday Afternoon 2.year smallClass1 ENGR254 E S
Tuesday Afternoon 1.year bigClass1 ENG102 C D
Tuesday Afternoon 3.year bigClass2 CENG302 C D
Tuesday Afternoon 4.year smallClass2 CENG470 E D

Wednesday Morning 1.year bigClass1 TIT101 C S
Wednesday Morning 2.year bigClass2 CENG202 C D
Wednesday Morning 3.year smallClass1 CENG310 E D
Wednesday Morning 4.year smallClass2 CENG466 E D

Wednesday Afternoon 1.year bigClass1 TDL102 C S
Wednesday Afternoon 2.year bigClass2 CENG204 C D
Wednesday Afternoon 4.year smallClass1 CENG451 E D
Wednesday Afternoon 3.year smallClass2 ENGR404 E D

Thursday Morning 3.year bigClass1 CENG304 C D
Thursday Morning 4.year bigClass2 CENG427 E D

Thursday Afternoon 1.year bigClass1 MATH106 C S
Thursday Afternoon 3.year bigClass2 CENG306 C D
Thursday Afternoon 4.year smallClass1 CENG404 E D

Friday Morning 1.year bigClass1 PHYS102 C S
Friday Morning 2.year smallClass1 ENGR256 E S
Friday Morning 3.year bigClass2 CENG415 E D

3 Big 1 Small Classroom and added busy times by hand according to given file.

Remove a Course

Courses: [_____ ▾] [**Remove Choosen Course**]

Add new course

Code of the Course   Name of the Course   Name of the Instructor   Credit   Year   Elective or Compulsary   Department or Service
[_____]   [_____]   [_____]   [▾]   [▾]   [▾]   [▾]   [**Add Course**]

Classrooms

Number of Big Clasrooms: [3]   Number of Small Clasrooms: [1]   [**Add Classes**]

Busy Courses

[**Bring Courses**]   [CENG206 ▾]   [Monday ▾]   [*Morning* ▾]   [**Add Busy Time**]

Monday Morning 4.year bigClass2 ENGR402 C D
Monday Morning 2.year bigClass3 CENG202 C D
Monday Morning 1.year bigClass1 CENG104 C D
Monday Morning 3.year smallClass1 CENG316 E D

Monday Afternoon 1.year bigClass1 MATH102 C S
Monday Afternoon 2.year bigClass2 ENGR202 C S
Monday Afternoon 3.year bigClass3 CENG302 C D
Monday Afternoon 4.year smallClass1 CENG474 E D

Tuesday Morning 1.year bigClass1 CHEM101 C S
Tuesday Morning 2.year bigClass2 CENG206 C D
Tuesday Morning 3.year bigClass3 CENG304 C D
Tuesday Morning 4.year smallClass1 CENG472 E D

Tuesday Afternoon 2.year smallClass1 ENGR254 E S
Tuesday Afternoon 1.year bigClass1 ENG102 C D
Tuesday Afternoon 3.year bigClass2 CENG306 C D
Tuesday Afternoon 4.year bigClass3 CENG470 E D

Wednesday Morning 1.year bigClass1 TIT101 C S
Wednesday Morning 2.year bigClass2 CENG204 C D
Wednesday Morning 3.year bigClass3 CENG318 E D
Wednesday Morning 4.year smallClass1 CENG466 E D

Wednesday Afternoon 1.year bigClass1 TDL102 C S
Wednesday Afternoon 3.year bigClass2 CENG317 E D
Wednesday Afternoon 4.year bigClass3 CENG451 E D

Thursday Morning 3.year bigClass1 CENG310 E D
Thursday Morning 4.year bigClass2 CENG427 E D

Thursday Afternoon 1.year bigClass1 MATH106 C S
Thursday Afternoon 4.year bigClass2 CENG404 E D
Thursday Afternoon 3.year bigClass3 ENGR404 E D

Friday Morning 1.year bigClass1 PHYS102 C S
Friday Morning 2.year smallClass1 ENGR256 E S
Friday Morning 3.year bigClass2 CENG415 E D