

# CS 1014: PROJECT 3

## Due March 22, 1999

### 100 points

#### OBJECTIVE:

In this project, you will have the opportunity to use and learn about the following constructs and expressions that are frequently used in a Fortran program:

1. Relational expressions
2. Logical expressions
3. Logical IF statement
4. Block IF statement

Before you begin writing your program in Fortran, you should develop the algorithm for the project first and then implement or translate the algorithm in Fortran. You may need to study the topics on relational expressions, logical expressions, and IF statements again and again before you use them in your Fortran program confidently. You may download example programs 8, 9, 10, and 11 to experiment and learn more about decision structures. Also you should solve the practice questions handed out in the class. Finally, you can use the sample program on calculation of commissions as a model to develop your own program for this project.

No cooperative work is allowed for this project. However, in case of difficulty, you may seek help from the course instructor or from the GTA.

#### PROBLEM STATEMENT:

In this project, you are required to write a program for a local inn that charges its guests on the following services:

1. Room
2. Local telephone calls
3. Long distance telephone calls
4. Laundry services

a) The charge for a room depends on the type of the room as stated in the following table.

Room Type	Number of Beds	Charge per Night
Standard (1)	1	\$50.00
	2	\$65.00
Delux (2)	1	\$60.00
	2	\$75.00
Executive (3)	1	\$85.00
	2	\$100.00

b) The charge for local calls is \$0.15 per call.

c) The charge for long distance calls is \$0.15 per call plus \$0.20 per minute.

d) The charge for laundry services is a fixed amount which, of course, varies from guest to guest.

A guest holding some credit card membership from some financial institution can receive some discount on the total charge as outlined below:

Card Type	%Discount
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Visa (1)	5%
Master (2)	7%
Gold Visa (3)	8%
Platinum (4)	10%
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Finally a guest is also required to pay 6% tax on the discounted total charge.

#### **INPUT:**

For each guest, the input file 'room.dat' contains a line of data in the following order:

1. Guest number (an integer),
2. Room type (an integer of 1, 2, or 3),
3. Number of beds (an integer of 1 or 2)
4. Number of nights (integer),
5. Number of local calls (integer),
6. Number of long distance calls (integer),
7. Minutes spent on long distance calls (integer), and
8. Charge for laundry service (a real number with two decimals)
9. Card membership type (an integer of 1, 2, 3, or 4)

Accordingly, create an input file "room.dat" with the following data to test your program:

1203	1	1	1	10	5	29	10.00	2
2312	1	2	2	8	4	20	15.00	1
1235	2	1	1	14	7	34	5.00	4
3406	2	2	3	17	3	30	5.00	3
2311	3	1	1	19	5	50	7.50	1
3211	3	2	2	5	2	15	4.00	3

**OUTPUT:**

The program should output the guest number, the total charge for the room, the total charge for all telephone calls, the charge for laundry services, the gross total charge, the discount, the total after discount, the tax, and the final total charge for each guest. The program should create the output file with the name "report3.out". With the test input as given above, the output file should look like as follows:

1203	50.00	8.05	10.00	68.05	4.76	63.29	3.80	67.08
2312	130.00	5.80	15.00	150.80	7.54	143.26	8.60	151.86
1235	60.00	9.95	5.00	74.95	7.49	67.45	4.05	71.50
3406	225.00	9.00	5.00	239.00	19.12	219.88	13.19	233.07
2311	85.00	13.60	7.50	106.10	5.30	100.79	6.05	106.84
3211	200.00	4.05	4.00	208.05	16.64	191.41	11.48	202.89

**DOCUMENTATION**

Do not forget to document your program. Some of your programs will be randomly selected from the archive (maintained on the grader server) later on for manual grading. Points will be deducted if your program is not well documented, well structured, and readable. You can use the program handed out for the first project as a model for documentation. Do not forget to include your name in the program documentation.

**SUBMISSION**

Make sure your program compiles, links, and runs without errors before you submit electronically. Notice that the program will not receive any input from the keyboard and also will not give you any output on the screen. The output will be saved in file "report3.out." You have to check that file for correctness. Once you are confident that your program is giving correct output, submit your program file to the grader server electronically. Do not submit the input or the output file. You will be able to make four submissions only. You may receive an early bonus of 5 points by submitting your program at least one day early. Remember the late penalty is 20% for each day late.