Department of Computer Engineering

CENG113 – Computer Programming I

FALL 2023 - 2024

Lab Guide #4 – Week 6

OBJECTIVE : Switch statements, Mathematical Functions, Character, and Strings
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1. The international standard letter/number mapping found on the telephone is shown below:

1	2 ABC	3 DEF
4 GHI	5 JKL	6 MNO
7 PQRS	8 TUV	9 WXYZ
	0	

Write a program that reads a alphabetical letter (in upper or lower-case) and displays its corresponding digit.

Let's remember the earlier weeks:
Analysis:
(Describe the problem including input and output in your own words.)

Design:
(Describe the major steps for solving the problem. Draw a flow chart satisfying your algorithm.)

Testing:
(Describe how you test this program)

Example run 1:
```
Enter an uppercase letter: A
The corresponding number is 2
```

Example run 2:
```
Enter an uppercase letter: H
The corresponding number is 4
```

Example run 3:
```
Enter an uppercase letter: P
The corresponding number is 7
```

Example run 4:
```
Enter an uppercase letter: a
The corresponding number is 2
```

Example run 5:
```
Enter an uppercase letter: !
a is an invalid input
```

Application Name: LabGuide4_1
Class Name: Question_1.java

2. Write a program that prompts the user to enter a string (may contain spaces) and displays its last character.

Example Run:
```
Enter s string: Programming is fun
The last character is n
```

Application Name: LabGuide4_2
Class Name: Question_2.java

3. Write a program that prompts the user to enter a four-digit binary number as a string and displays its corresponding decimal value. Here is a sample run:

Example Run:
```
Enter a four-digit binary string: 1111
The decimal number for 1111 is 15
```

Application Name: LabGuide4_3
Class Name: Question_3.java

4. Write a program that prompts the user to enter a decimal number between 0 and 15 and displays its corresponding binary value. Here are sample runs: (Explore Integer class methods)

Example Run 1:
```
Enter a decimal number between 0 and 15: 11
The binary number for 11 is 1011
```

Example Run 2:
```
Enter a decimal number between 0 and 15: 5
The binary number for 5 is 101
```

Application Name: LabGuide4_4
Class Name: Question_4.java

5. In a library, there are bookstands and each bookstand contains three shelves. Write a C program that gets size of a shelf, total number of bookstands and total number of books from the user.

- If the current number of bookstands is not enough, the program shows the user how many bookstands are needed.
- If the current number of bookstands is enough, the appropriate message will appear.
- Otherwise, shows number of free book space in the bookstand.

Bookstand: kitaplık
Shelf: raf

Example Run#1:
```
Enter the size of a shelf: 30
Enter total number of books: 300
Enter total number of bookstands: 4
Bookstand can be store 60 more book
```

Example Run#2:
```
Enter the size of a shelf: 20
Enter total number of books: 500
Enter total number of bookstands: 3
There is/are 6 bookstand(s) is/are needed
```

Example Run#3:
```
Enter the size of a shelf: 120
Enter total number of books: 360
Enter total number of bookstands: 1
There is/are enough bookstand(s) to store 360 books
```

Application Name: LabGuide4_5
Class Name: Question_5.java