**School of Digital Media & Infocomm Technology (DMIT)**

**ST2111 Mobile Application Development I**

**Practical 7**

**Functions and Methods**

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| Objectives:  After completing this lab, you should be able to:   * Write programs which demonstrate defining and calling functions * Write programs which utilize JavaScript built-in **String**, **Math**, and **Date** methods |

**Exercise 1: Write Programs Using Functions**

1. Create a copy of the **practical1-1** in the same **MAD1** folder
2. Rename the copied folder as **practical7-1** folder
3. Write a function inside **script.js** to convert celsius to fahrenheit:

**Example Solution:**

function toCelsius(fahrenheit) {

    return (5/9) \* (fahrenheit-32);

}

temp = toCelsius(32);

text = "The temperature is " + temp + " Centigrade";

**Exercise 2:**

1. Create a copy of the **practical1-1** in the same **MAD1** folder
2. Rename the copied folder as **practical7-2** folder
3. Write a function called **printTable** inside **script.js** to to print the “5 times” multiplication table. The function does not take in any parameter and does not return any value. Make sure to call **printTable** to execute the function.

**Exercise 3:**

1. Create a copy of the **practical1-1** in the same **MAD1** folder
2. Rename the copied folder as **practical7-3** folder
3. Write a boolean function **isLeapYear** that takes in an integer **year** as parameter. The function returns true if ***year*** is a leap year and false otherwise. Below are the rules to determine if a year is a leap year. Implement the rules in your function.

To determine whether a year is a leap year, follow these steps:

Step 1. If the year is evenly divisible by 4, go to step 2. Otherwise, go to step 5.  
Step2. If the year is evenly divisible by 100, go to step 3. Otherwise, go to step 4.

Step 3. If the year is evenly divisible by 400, go to step 4. Otherwise, go to step 5.

Step 4. The year is a leap year (it has 366 days).

Step 5. The year is not a leap year (it has 365 days).

**Exercise 4:**

1. Create a copy of the **practical1-1** in the same **MAD1** folder
2. Rename the copied folder as **practical7-4** folder
3. Write a function ***findMax*** that takes in 2 integer values ***num1*** and ***num2***. It compares which number is bigger and returns one of the following values:

"1st number is bigger"

"2nd number is bigger"

"The 2 numbers are equal"

**Exercise 5: Write programs utilizing String Functions**

1. Create a copy of the **practical1-1** in the same **MAD1** folder
2. Rename the copied folder as **practical7-5** folder
3. Write a function ***checkEmail*** that takes in a string parameter called **strEmail**. The function will return true if **strEmail** is a valid email format.
4. In the main program, prompt the user for input. Use **checkEmail** to check the validity of the input and display an alert informing the user.

**Exercise 6: Write programs utilizing String Methods**

1. Create a copy of the **practical1-1** in the same **MAD1** folder
2. Rename the copied folder as **practical7-6** folder
3. Write the program that will prompt the user for two input strings **strSearch** and **strBody**.
4. Create functions to do the following:
   1. Display the length of **strBody**
   2. Display a message indicating whether strSearch is a **substring** in **strBody**
   3. Display **strBody** in all capitals
   4. Display a string which is the result of adding **strSearch** and **strBody**.
   5. Display a string indicating whether **strSearch** is a valid number (i.e. “123”)

**Exercise 7: Write programs utilizing Math Methods**

1. Create a copy of the **practical1-1** in the same **MAD1** folder
2. Rename the copied folder as **practical7-7** folder
3. Create a program which will generate a random number between 1 and 100. Use the **Math.random** function.
4. Search the internet. Describe the return value of the **Math.random** function?\_\_\_\_\_\_\_\_\_\_\_\_
5. Search the internet. Describe the return value of the **Math.floor** function?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sample code:

Math.floor((Math.random() \* 10) + 1);

**Exercise 8: Write programs using Date Methods**

1. Create a copy of the **practical1-1** in the same **MAD1** folder
2. Rename the copied folder as **practical7-8** folder
3. Given the following instance of a Date object

var d = new Date("July 21, 1983 01:15:00");

write a program which displays the output of each of the functions in the table below:

|  |  |
| --- | --- |
| **Function** | **Output** |
| getDate() |  |
| [getDay()](http://www.w3schools.com/jsref/jsref_getday.asp) |  |
| [getFullYear()](http://www.w3schools.com/jsref/jsref_getfullyear.asp) |  |
| [getHours()](http://www.w3schools.com/jsref/jsref_gethours.asp) |  |
| [getMilliseconds()](http://www.w3schools.com/jsref/jsref_getmilliseconds.asp) |  |
| [getMinutes()](http://www.w3schools.com/jsref/jsref_getminutes.asp) |  |
| [getMonth()](http://www.w3schools.com/jsref/jsref_getmonth.asp) |  |
| [getSeconds()](http://www.w3schools.com/jsref/jsref_getseconds.asp) |  |

**Exercise 9: Run Exercises in the Android Simulator**

1. From the [Start screen](http://www.computerhope.com/jargon/w/windows8.htm)  click **Command Prompt** to open the Windows console.
2. type **cd\** to bring you to the root directory **c:\**
3. Create the new app by typing **phonegap create appfunction**and press enter
4. Open a text editor and open the file located in **c:\appif\www\index.html**
5. Replace the text with the code in **Listing A** below.
6. Copy **script.js** from your previous exercise to the **www** directory.
7. In the command prompt, type **cd\** to bring you to the root directory.
8. Type **cd appfunction** to navigate to the **appfunction** subdirectory.
9. Type **phonegap run android**
10. Your JavaScript program is run in the Android Simulator

**Exercise 10: Run Exercises in the Android Simulator**

You may run your exercises using the Phonegap Android Simulator to view the output. For example, if you wish to test out **practical7-1**, do the following:

1. From the [Start screen,](http://www.computerhope.com/jargon/w/windows8.htm) click **Command Prompt** to open the Windows console.
2. Navigate to **MAD1** folder. (Note: If your MAD1 folder is in **c: drive**, type **cd\** to bring you to the root directory first, then type **cd mad1** to go to MAD1 folder. If your MAD1 folder is in **d: drive**, type **d:** to change to d: drive first, then type **cd mad1** to go to MAD1 folder.**)**
3. Create the new app by typing **phonegap create practical7-1app**and press enter.
4. Open a text editor and open the file located in **mad1\practical7-1app\www\index.html**.
5. Replace the text with the code in **Listing D** below.
6. Copy **script.js** from **practical7-1** to the **www** directory.
7. Type **phonegap run android**.
8. Your JavaScript program is run in the Android Simulator.

**Listing A. index.html**