

## Assignment 3 COP 3514 Program Design

**Due 06/14/2013**

1. John Smith spends a lot of time on Internet websites. He does Internet shopping, spends time on social networking sites and plays a lot of games. He noticed that his web browser provides suggestions of items for him to buy, or sites for him to visit based on his browsing history. He thinks that the algorithm that is being used is not efficient and the suggested items and sites are not very useful for him. John decided to create his own data mining algorithm that will use his browsing history to find and suggests items or sites that he might be interested in. Part of this project involves URL filtering and parameter and value extraction. An example URL format is:

“ http://example.com/shop/index.php?product\_id=58&highlight=blue+shoes&cat\_id=5&sessionid=123&affid=543”

To filter the URL, John wants to discard anything after the '?' character including the '?'. He also wants to extract all of the parameters and values. A string is a parameter if it is either after the '?' character or after any '&' character. A string is a value of a parameter if it is after any '=' character and ends at the '&' character or at the end of the URL. In this assignment you are to create functions that filter an URL and extract the parameters and their values and store them in arrays.

**Files:**

**You are provided with the files:**

**Assignment3.c**

**Assignment3.h**

**main.c**

**Makefile.**

**You are to complete the functions in Assignment3.c**

**You are NOT to modify Assignment3.h**

**You can use main.c to test the correctness of the functions.**

**Output format of the print() function:**

**The URL is: [filtered URL]**

**There are [number of parameters] parameters and [number of values] values.**

**Parameter [number of parameter]: "[name of parameter]" with [value of parameter/no value]**

**It is OK to have parameters with no values but you cannot have values with no parameters. If this is the case the output should be “URL ERROR” (see Example 5 and 6)**

**Grading:**

**Your code will be tested with 9 regular test case inputs (10 points each) and 2 special test case inputs (5 points each)**

## Submission:

**Submission should be done only through Blackboard.**

## Compiling and testing:

To compile your file make sure all of the files are in the same directory. Type “make --always-make” in the terminal in the directory of the files. If there are no compilation errors a main executable will be created.

To test your program run “./main” from the terminal in the directory of the files.

Following are few examples that will clarify how the output should be formatted.

**Note: The examples also show how many newlines should be added after each message. Red font indicates inputs by the user.**

---

### *Example 1:*

---

**http://example.com/shop/index.php?product\_id=58&highlight=blue+shoes&cat\_id=5&sessionid=123&affid=543**

The URL is: http://example.com/shop/index.php

There are 5 parameters and 5 values.

Parameter 1: "product\_id" with value "58"

Parameter 2: "highlight" with value "blue+shoes"

Parameter 3: "cat\_id" with value "5"

Parameter 4: "sessionid" with value "123"

Parameter 5: "affid" with value "543"

---

### *Example 2:*

---

**http://example.com/shop/index.php?product\_id=&highlight=blue+shoes&cat\_id=&sessionid=123&affid=543**

The URL is: http://example.com/shop/index.php

There are 5 parameters and 3 values.

Parameter 1: "product\_id" with no value

Parameter 2: "highlight" with value "blue+shoes"

Parameter 3: "cat\_id" with no value

Parameter 4: "sessionid" with value "123"

Parameter 5: "affid" with value "543"

---

### *Example 3:*

---

**http://example.com/shop/index.php**

The URL is: http://example.com/shop/index.php

There are 0 parameters and 0 values.

---

### *Example 4:*

---

**http://facebook.com/index.php?name=John&last\_name=Smith**

The URL is: http://facebook.com/index.php

There are 2 parameters and 2 values.

Parameter 1: "name" with value "John"

Parameter 2: "last\_name" with value "Smith"

---

### *Example 5:*

---

**http://facebook.com/index.php?name=John&=Smith**

The URL is: http://facebook.com/index.php

URL ERROR

---

### *Example 6:*

---

**http://example.com/shop/index.php?=58&highlight=blue+shoes&cat\_id=5&sessionid=123&affid=543**

The URL is: http://example.com/shop/index.php

URL ERROR