

The Islamia University of Bahawalpur

Department of Computer Science & IT

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Programming Fundamentals

Midterm Examination (Spring 2020)

00 xxxx, 2020 (Time: 60 min)

Problem	Your points	Max points	Problem	Your points	Max points
1		07	2		07
3		11	4		05
Subtotal		18	Subtotal		12
Your total points					30

Name: _____ Roll No: _____ Signature: _____

1. MCQs [7]

- a) What was the goal of Unit 1 of our course? [1]
- a. Get started programming.

b. Learn important computers science concepts.

c. Write code to extract a link from a web page.

d. Write code to rank web pages.
- b) What is a programming language? [1]
- a. a language designed to be executed by computers

b. a language designed for describing programs

c. a language designed to be written by humans, and executed by computers

d. a language designed to be read by humans, and written by computers

e. a language designed to be read and written by humans, and executed by computers
- c) What were the inputs for the procedure, `get_next_target` (that we defined in Unit 1)? [1]
- a. a number giving position of start of link

b. a number giving position of start of next quote

c. a string giving contents of the rest of the web page

d. a number giving position of start of link and a string giving page contents
- d) What should the outputs be for `get_next_target`? [1]
- a. a string giving the value of the next target url (url)

b. url, page

c. url, end_quote

d. url, start_link
- e) A person is defined “young and rich” if he is “under 30 years of age” and has “more than 1000000 rupees”. An expression that would define this person is: [1]
- a. `age < 30 and money > 1000000`

b. `age < 30 or money > 1000000`

c. `age <= 30 and money >= 1000000`

d. `age <= 30 or money >= 1000000`
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f) We defined a list: [1]

```
stooges = ['Moe', 'Larry', 'Curly']
```

In some Stooges films, though, Curly was replaced by Shemp. Write one line of code that changes the value of stooges to be:

```
['Moe', 'Larry', 'Shemp']
```

g) What is the value of len(p) after running: [1]

```
p = [1, 2]
q = [3, 4]
p.append(q)
len(p) → ?
```

2. One Liners [7]

a) Define the term “Program”, in a single line: [1]

b) Consider the following python variables: [1]

```
hours_per_day = 24
minutes_per_hour = 60
seconds_per_minute = 60
```

Complete the following python statement to print the number of seconds in a day.

```
print _____
```

c) What is the value of “seconds” after the following code executes: [1]

```
minutes = 30
minutes = minutes + 1
seconds = minutes * 60
```

d) Write Python code that stores the distance in meters that light travels in one nanosecond in the variable nanodistance. These variables are defined for you [1]

```
speed_of_light = 299800000.
nano_per_sec = 1000000000.
```

e) Consider following variables: [2]

```
greeting = "AoA"
name = "Madam"
```

Write python statement that prints the following string using variables above: “AoA Madam!!”
Hint: Use string concatenation (+)

```
print _____
```

f) Write Python code that prints out Udacity (with a capital U), given the definition [1]

```
s = 'audacity'
print _____
```

3. Code it out. [11]

- a) Write Python code that assigns to the variable `url` a string that is the value of the first URL that appears in a link tag in the string page. For the example in given situation, your code should end up with `url` having the value `'http://udacity.com'`. [3]

```
page = ('<div class="udacity float-left"><a
href="http://udacity.com">')
start_link = page.find('<a href=')
```

```
print url
```

Output: <http://udacity.com>

- b) Define a procedure, `abbaize`, that takes two strings as its input, and outputs a string that is the first input followed by two repetitions of the second input, followed by the first input. [2]

```
abbaize('a', 'b') → 'abba'
abbaize('dog', 'cat') → 'dogcatcatdog'
```

- c) Define a procedure, `bigger`, that takes in two numbers as inputs, and outputs the greater of the two inputs. [2]

```
bigger(2, 7) → 7
bigger(3, 3) → 3
```

- d) Assume that `text` is a variable that holds a string. Write python code that prints out the position of the second occurrence of `zip` in `text` or `-1` if it does not occur at least twice i.e. for `text = 'zip files are zipped'` answer will be `14` and for `text = 'zip files are compressed'` answer is `-1`. [2]

- e) Define a procedure, `countdown` that takes a positive whole number as its input, and prints out a countdown from that number to 1, followed by Blastoff! The procedure should not return anything. [2]

4. Multiplication Table [5]

Define a procedure, `print_multiplication_table`, that takes as input a positive whole number, and prints out a multiplication table showing all the whole number multiplications up to and including the input number.

Hint: You cannot add an integer and a string, but in a homework you came across a method, `str`, for turning an integer into a string.

<pre>print_multiplication_table(3) #>>> 1 * 1 = 1 #>>> 1 * 2 = 2 #>>> 1 * 3 = 3 #>>> 2 * 1 = 2 #>>> 2 * 2 = 4 #>>> 2 * 3 = 6 #>>> 3 * 1 = 3 #>>> 3 * 2 = 6 #>>> 3 * 3 = 9</pre>	<pre>print_multiplication_table(2) #>>> 1 * 1 = 1 #>>> 1 * 2 = 2 #>>> 2 * 1 = 2 #>>> 2 * 2 = 4</pre>
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