CS 320 - Spring 2023

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Exam 2 — 13%

(Last) Surname: _____ (First) Given name: _____

NetID (email): _____ @wisc.edu

Fill in these fields (left to right) on the scantron form (use #2 pencil):

1. LAST NAME (surname) and FIRST NAME (given name), fill in bubbles
2. IDENTIFICATION NUMBER is your Campus ID number, fill in bubbles
3. Under *ABC* of SPECIAL CODES, write your lecture number, fill in bubbles:
   001 - MWF 11:00am
   002 - MWF 1:20pm
4. Under **F** of SPECIAL CODES, write **1** and fill in bubble **1**

If you miss step 4 above (or do it wrong), the system may not grade you against the correct answer key, and your grade will be no better than if you were to randomly guess on each question. So don't forget and double check it's correct!

You may only reference your note sheet. You may not use books, calculators, or other electronic devices during this exam. You may not sit near your friends or look at your neighbors during this exam. Please place your student ID face up on your desk. Turn off and put away portable electronics (including smart watches) now.

Use a #2 pencil to mark all answers. DO NOT USE PEN on the scantron.

When you're done, please hand in the exam and note sheet and your filled-in scantron form. The note sheet will not be returned.

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1. Which of the following options will enable us to find **all** the table rows in the below HTML? Assume that the variable `b` stores a Selenium WebDriver object instance and the response for the HTTP GET request only contains the below table.

```
<table id="people">
  <tr><td>Name</td><td>Age</td><td>City</td></tr>
  <tr><td>Mirha</td><td>30</td><td>New York City</td></tr>
  <tr><td>Iris</td><td>25</td><td>Los Angeles</td></tr>
</table>
```

   A. `b.find_element("id", "people")`

   B. `b.find_elements("id", "people")`

   C. `b.find_element("tag name", "tr")`

   D. `b.find_elements("tag name", "tr")`

2. Assume that the variable `text` stores a a reference to a WebElement object instance which can accept `input`. Which of the following will enable us to send `2023` as the input?

   A. `text.send_keys("2023")`

   B. `text.send_text("2023")`

   C. `text.send_keys(2023)`

   D. `text.send_text(2023)`

3. What argument should we pass to the parameter `host` in `app.run(host=???, debug=True, threaded=False)`, to make sure that our Flask application can accept traffic from any IP address?

   A. `"any"` B. `"all"` C. `"localhost"` D. `"127.0.0.1"` **E.** `"0.0.0.0"`

4. What URL should be visited to get the page containing `"Hello, World!"`?

```
@app.route('/hello.html')
def index():
    return "Hello, World!"

@app.route('/')
def home():
    return "Welcome to my website!"
```

A. `http://127.0.0.1:5000/`

B. `http://127.0.0.1:5000/index.html`

C. `http://127.0.0.1:5000/hello.html`

D. `http://127.0.0.1:5000/home.html`

E. `http://127.0.0.1:5000/world.html`

5. Which of the following enables us to process query string inside a flask application program?

A. `flask.request.remote_addr`

B. `flask.request.args`

C. `flask.Response.remote_addr`

D. `flask.Response.args`

6. Given the below contingency table, what is A's CTR?

	click	**no-click**
A	500	500
B	550	450

A. 0.50 B. 0.55 C. 1 D. 1.2

7. A single webpage can be represented using which of the following structures? Choose the most specific option that is true.

A. binary tree B. BST C. DAG D. directed graph **E. tree**

8. In a flask application, how can we specify the response content type?

   A. request header

   B. response header

   C. page extension

   D. status code

   E. query string

9. Given the string `"Today is 2023-04-07."`, which of the following regular expressions will match the date `"2023-04-07"`?

   A. `\d{2}-\d{2}-\d{4}`

   B. `\d{2}\\-\d{2}\\-\d{4}`

   C. `\d{4}-\d{2}-\d{2}`

   D. `\d{4}\\-\d{2}\\-\d{2}`

10. Given `s = "I have 10 apples and\t5 oranges."`, which of the will replace all white spaces in the string with `"-"`, returning `"I-have-10-apples-and-5-oranges."`?

    A. `re.sub(r".+", "-", s)`

    B. `re.sub(r"\s+", "-", s)`

    C. `re.sub(r"\S+", "-", s)`

    D. `re.sub(r"\d+", "-", s)`

    E. `re.sub(r"\w+", "-", s)`

11. Which of the following strings can be matched by the regular expression `r"^[A-Za-z]+$"`?

    A. `"Hello, world!"`

    B. `"123 Main Street"`

    C. `"email@example.com"`

    D. `"Goodbye"`

12. What gets returned by `re.sub(r"(\w+), (\w+)", "\g<2> \g<1>", "Lovelace, Ada")`?

    A. `"Ada Lovelace"`

    B. `"Ada, Lovelace"`

    C. `"Lovelace, Ada"`

    D. `"Lovelace Ada"`

13. What gets printed?

```
import re

msg = "I have 25 strawberries, 3 pears, 5 bananas, and 10 peaches."
matches = re.findall(r"((\d+)\s(\w+))", msg)
print(len(matches[-1]))
```

A. 1 B. 2 **C. 3** D. 4 E. 5

14. Which of the following will enable us to extract just United States of America `GeoDataFrame` from `"naturalearth_lowres"`?

```
import geopandas as gpd
from shapely.geometry import box

gdf = gpd.read_file(gpd.datasets.get_path("naturalearth_lowres"))
usa_window = box(-125.0, 24.0, -66.0, 50.0)
```

A. `gdf.union(usa_window)`

B. `gdf.difference(usa_window)`

C. `gdf.intersection(usa_window)`

D. `gdf[~gdf.intersects(usa_window)]`

E. `gdf[gdf.intersects(usa_window)]`

15. To draw a line that spans across `ax1`, `ax2`, and `ax3`, we should invoke `add_artist` using which of the following object instances?

```
import matplotlib.pyplot as plt

fig, (ax1, ax2, ax3) = plt.subplots(ncols=3, figsize=(6, 4))
x1, y1 = ax1.transData.transform((0.2, 0.2))
x2, y2 = ax3.transData.transform((2, 0.5))
arrow = plt.Line2D((x1, x2), (y1, y2), transform=None)
???.add_artist(arrow)
```

A. `fig` B. `ax1` C. `ax2` D. `ax3`

16. `Retry-After` is most often specified in the headers for a response with which status code?

A. 100 B. 200 C. 404 **D. 429** E. 500

17. What is `type(b)`?

```
from shapely.geometry import Polygon, Point, box

b = box(4, 4, 10, 10)
```

A. `shapely.geometry.point.Point`

B. `shapely.geometry.box`

C. `shapely.geometry.polygon.Polygon`

D. `shapely.geometry.polygon.Rectangle`

18. To correctly compute area of geographic polygons, which of the following should be the axis units of the Coordinate Reference System?

A. lat/long **B. meters** C. pixels D. transData E. transAxes

19. Geocoding enables us to:

A. convert lat/long to meter-based CRS

B. add zip code to street address

C. convert lat/long to street address

D. convert street address to lat/long

20. While creating a `matplotlib` patch, which of the following **parameters** enables us to specify Coordinate Reference System?

A. `transform` B. `transformer` C. `crs` D. `to_crs`

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