

Exam 2 Version X

■ Question 1

■ [1 points] Assume element is a Selenium WebElement given by `link<a>`. Which of the following returns "page.html"?

- `element.href`
- `element.text`
- `element.get_attribute("href")`
- `element.get_attribute("text")`

■ Question 2

■ [1 points] Suppose element is an HTML table WebElement with 3 rows and 3 columns, which of the following code finds the text in the first cell of the last row in the table?

- `element.find_elements("tag name", "tr")[2].find_elements("tag name", "td")[2].text`
- `element.find_element("tag name", "tr").find_element("tag name", "td").text`
- `element.find_elements("tag name", "tr")[2].find_element("tag name", "td").text`
- `element.find_element("tag name", "tr").find_elements("tag name", "td")[2].text`

Question 3

[1 points] Suppose the following nodes are in the priority queue, {node: "A", g: 1, h: 10}, {node: "B", g: 3, h: 7}, {node: "C", g: 5, h: 3}, {node: "D", g: 7, h: 2}, where "g" represents the distance from the initial node and "h" represents an admissible heuristic (estimated distance to the goal node). Which node will A* search check next?

"B"

"A"

"D"

"C"

Question 4

[1 points] There are infinite number of web pages labeled by $(0, 0)$, $(0, 1)$, $(0, 2)$, ..., $(1, 0)$, $(1, 1)$, ... and page (i, j) contains links to pages $(i + 1, j)$ and $(i, j + 1)$. Suppose we start at page $(0, 0)$ and the goal is to find page $(10, 10)$, which one of the following search heuristic is NOT admissible?

$h((i, j)) = |10 - i| + |10 - j|$

$h((i, j)) = 1$

$h((i, j)) = \max(|10 - i|, |10 - j|)$

$h((i, j)) = 0$

Question 5

[1 points] Which of the following is a correct query string for route data that produces `dict(flask.request.args) = {"from": "A", "to": "B"}`

- IP:5000/data?from=A,to=B
- IP:5000/data?from=A&to=B
- IP:5000/data?from="A",to="B"
- IP:5000/data?from="A"&to="B"

Question 6


[1 points] What URL should be visited to get the page that displays "aaa"?

```
@app.route("/aaa")  
def aaa():  
    return "bbb"
```


```
@app.route("/")  
def bbb():  
    return "aaa"
```


- http://127.0.0.1:5000/aaa
- http://127.0.0.1:5000/bbb
- http://127.0.0.1:5000/
- http://127.0.0.1:5000/index

 Question 7

 [1 points] Which of the following types of visitor information can be found based on `flask.request.remote_addr`?

- Browser information
- Device information
- Service provider
- Operating system

 Question 8

 [1 points] In a Flask app, `app.route("/index/<x>")` binds the function `index(x)` return `x`. What will visits to `"/index/2?x=1"` display?

- 1
- (Error)
- (Status Code 404)
- 2



Question 9

[1 points] Suppose the total number of visits to version A and version B pages are fixed, say at 100 and 100. Which of the following will result in the smallest p-value for an A/B test?


- 75 clicks on A, 25 clicks on B
- 50 clicks on A, 0 clicks on B
- 50 clicks on A, 50 clicks on B
- 0 clicks on A, 100 clicks on B

Question 10

[1 points] When analyzing three contingency tables from an A/B test, `scipy.stats.fisher_exact(df)` returns 0.005 for table 1, 0.05 for table 2, and 0.5 for table 3. At a threshold for significance of 10 percent, for how many tests do we have statistically significant evidence that B has a different click-through-rate than A?

- 3
- 2
- 1
- 0

 Question 11

 [1 points] If the current average click through rates from versions A, B, C of the page are the same, and the numbers of visits to A, B, C are 10, 20, 30, respectively, which version with the UCB1 (upper confidence bound) algorithm display next?


C

A, B, C with equal probability

Depends on the variance

A

 Question 12

 [1 points] How many of the following visual encodings are more suitable for ordinal data columns over categorical data columns: (1) size, (2) shape (style), (3) color value (lightness or brightness), (4) color hue, (5) texture (different patterns inside a shape).

4

2

1

3

■ Question 13

■ [1 points] In a DataFrame with columns c1, c2, c3, c4 containing categorical data with 2, 3, 4, 5 categories respectively, how many subplots (axes) will `seaborn.relplot(data, x = "c1", y = "c2", col= "c3", row = "c4")` make?

1

20

12

6

■ Question 14

■ [1 points] Which of the following transform will give you the circle that looks the largest on the screen?

```
fig, ax = plt.subplots()
ax.set_xlim(0, 2)
ax.set_ylim(0, 2)
circle = plt.Circle((0.5, 0.5), 0.5, transform = ??)
??.add_artist(circle)
```

`ax.transData`

(two of the choices have the same largest size)

`ax.transAxes`

`fig.transFigure`

■ Question 15

■ [1 points] If the quadratic Bezeir curve `matplotlib.patches.FancyArrowPatch((10, 10), (0, 0), connectionstyle=ConnectionStyle.Angle3(135, 90))` has three control points $(10, 10)$, (a, b) , $(0, 0)$, what is the value of (a, b) ?

$(0, 10)$

$(0, 20)$

$(20, 0)$

$(10, 0)$

■ Question 16

■ [1 points] Which of the following does NOT produce a square if `x = shapely.geometry.box(0, 0, 2, 2)`, `y = shapely.geometry.box(1, 1, 3, 3)`?

(All other choices produce a square)

`x.union(y)`

`x.intersection(y)`

`x.convex_hull`

■ Question 17

■ [1 points] If $x = \text{shapely.box}(0, 0, 1, 1)$ and $y = \text{shapely.box}(a, b, c, d)$ for some $a < c$, $b < d$, $z = x.\text{union}(y)$, what is the maximum number of vertices the polygon z will have?

4

8

1

6

■ Question 18

■ [1 points] What will be `len(matches)` given the code below? (Note there is no space between CS and 320)

```
courses = "CS320, CS 368, CS 540, CS 559"  
matches = re.findall("[A-Z]+(\d{3})", courses)
```

0

3

1

2



Question 19

[1 points] What does this line output `re.sub(r"(((\d)\d)\d)", "\g<3>\g<2>\g<1>", "123 320")`?

"123121 320323"

"112123 332320"

"123 320 12 32 1 3"


"321 023"

Question 20

[1 points] If you think any of the questions are not clear or incorrect, please explain here; otherwise, enter "none". Please do not leave the answer blank:

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 END OF EXAM

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