Exam 2 Version Y

📗 Question 1

📗 [1 points] Assume `element` is a Selenium WebElement given by `<a href="link.html" target="_blank">page<\a>`. Which of the following returns `"link.html"`?

- [ ] `element.href`
- [ ] `element.text`
- [x] `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 last cell of the first 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`
- [x] `element.find_element("tag name", "tr").find_elements("tag name", "td")[2].text`
- [ ] `element.find_elements("tag name", "tr")[2].find_element("tag name", "td").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 best first greedy search check next?

- [ ] "C"
- [ ] "B"
- [ ] "A"
- [x] "D"

📗 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|`
- [x] `h((i, j)) = 1`
- [ ] `h((i, j)) = min(|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": "B", "to": "A"}`

- [ ] `IP:5000/data?from=B,to=A`
- [x] `IP:5000/data?from=B&to=A`
- [ ] `IP:5000/data?from="B",to="A"`
- [ ] `IP:5000/data?from="B"&to="A"`

📗 Question 6

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

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


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

- [ ] `http://127.0.0.1:5000/`
- [ ] `http://127.0.0.1:5000/bbb`
- [x] `http://127.0.0.1:5000/aaa`
- [ ] `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
- [x] Location information
- [ ] 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/1?x=2" display?

- [ ] 2
- [ ] (Error)
- [ ] (Status Code 404)
- [x] 1

📗 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?

- [ ] 25 clicks on A, 75 clicks on B
- [ ] 0 clicks on A, 50 clicks on B
- [ ] 50 clicks on A, 50 clicks on B
- [x] 100 clicks on A, 0 clicks on B

📗 Question 10

📗 [1 points] When analyzing three contingency tables from an A/B test, `scipy.stats.fisher_exact(df)` returns 0.002 for table 1, 0.02 for table 2, and 0.2 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
- [x] 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 30, 20, 10, respectively, which version with the UCB1 (upper confidence bound) algorithm display next?

- [ ] A
- [ ] A, B, C with equal probability
- [ ] Depends on the variance
- [x] C

📗 Question 12

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

- [ ] 4
- [x] 3
- [ ] 1
- [ ] 2

📗 Question 13

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

- [ ] 1
- [x] 6
- [ ] 12
- [ ] 20

📗 Question 14

📗 [1 points] Which of the following `transform` will give you the circle that looks the smallest 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)
```

- [ ] `fig.transFigure`
- [ ] (two of the choices have the same smallest size)
- [ ] `ax.transAxes`
- [x] `ax.transData`

📗 Question 15

📗 [1 points]If the quadratic Bezeir curve `matplotlib.patches.FancyArrowPatch((10, 10), (0, 0), connectionstyle=ConnectionStyle.Angle3(-45, 0)` has three control points `(10, 10), (a, b), (0, 0)`, what is the value of `(a, b)`?

- [ ] `(0, 10)`
- [x] `(20, 0)`
- [ ] `(0, 20)`
- [ ] `(10, 0)`

📗 Question 16

📗 [1 points] Which of the following does NOT produce a square if `x = shapely.geometry.box(0, 0, 4, 4)`, `y = shapely.geometry.box(1, 1, 3, 3)`?

- [ ] `x.intersection(y)`
- [x] (All other choices produce a square)
- [ ] `x.union(y)`
- [ ] `x.convex_hull`

📗 Question 17

📗 [1 points] If `x = shapely.box(0, 0, 1, 1)` and `y = shapely.box(a, b, c, d)` for some `a < c, b < d`, `z = x.union(y)`, what is the minimum number of vertices the polygon `z` will have?

- [ ] 8
- [x] 4
- [ ] 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]+)\s(\d{3})", courses)
```

- [ ] 0
- [ ] 1
- [x] 3
- [ ] 2

📗 Question 19

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

- [ ] `"320323 123121"`
- [x] `"332320 112123"`
- [ ] `"320 123 32 12 3 1"`
- [ ] `"023 321"`

📗 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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