Quiz – Rust

*Searching-Sorting-2D Arrays-Vectors*

**Circle** the most appropriate **answer** to each of the following questions.

*[K10]*

1. A **two dimensional array** of the form [ [0, 0, 0], [0, 0, 0] ] is created with which of the following lines of Rust code
2. let n = [ [0;2]; 3 ];
3. let n = [ [0;3]; 2 ];
4. let n = [ 0, 0, 0, 0, 0, 0 ];
5. let n = { {0, 0, 0}, {0, 0, 0} };
6. What is the **output** of the following Rust code?

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Description automatically generated

1. [ [0, 0, 0], [1, 1, 1], [4, 4, 4] ]
2. [ [0, 0, 0], [1, 1, 1], [2, 2, 2] ]
3. [ [0, 1, 2], [0, 1, 2], [0, 1, 2] ]
4. [ [0, 1, 4], [0, 1, 4], [0, 1, 4] ]
5. A **vector** in Rust, a collection that allows you to store a variable number of values next to each other, is created using which of the following statements?
6. let values: Vec<i32> = Vec::new();
7. let values = { 75, 80, 90 };
8. let values = vec75, 80, 90];
9. both (a) and (c)
10. ![A white background with black text

    Description automatically generatedWith the following code

What **vector** is created?

1. [8, 7, 6, 5]
2. [5, 6, 7, 8]
3. [0, 5, 6, 7, 8]
4. Nothing. There is a compiler error.
5. An **algorithm** that begins by looking at the first element in an array, and then moves to the next element and the next element, in sequence, until it finds the value or reaches the end of the array, is called the
6. **linear search** (b) **binary search** (c) **random search** (d) **selection sort**
7. A screenshot of a computer code

   Description automatically generatedWhat is the output of the following Rust code?
8. -4
9. 2
10. 9
11. Nothing. There is a compiler error.
12. What is the **output** of the following Rust code?

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1. 7
2. 5
3. [75, 89, 90, 35, 95]
4. 3
5. What is the **output** of the following Rust code?

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1. Some(90)
2. 90
3. Some(75)
4. 75
5. In order to effectively play the **guessing game**, where you must guess a number between 1 and 100, given only ***‘too high’*** or ***‘too low’*** as feedback, you must use a
6. **linear search** (b) **selection sort** (c) **binary search** (d) **random search**
7. Using the **most efficient algorithm**, how many **attempts** must you make in the **guessing game**, described above, in order to **guarantee** that you will guess the correct number?
8. 20 (b) 7 (c) 6 (d) 10

Answer the following questions **in the space provided**.

1. Consider the **linear search** algorithm,
2. What is its main **advantage**?

[K1]

1. What is its main **disadvantage**?

[K1]

1. Consider the **binary search** algorithm,
2. What is its main **advantage**?

[K1]

1. What is its main **disadvantage**?

[K1]

1. Describe in words, the **selection sort** algorithm.

[K2]

1. Given the following sequence of numbers, write the sequence that results **after each pass** through the sequence using the **selection sort** algorithm. **Stop** when the sequence is sorted.

[A5]

**Given:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 8 | -5 | 3 | -10 | 1 | 0 | -7 |

**Pass #1:**

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**Pass #2:**

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**Pass #3:**

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| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |

**Pass #4:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
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**Pass #5:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
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**Pass #6:**

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1. Consider the following Rust program
2. **Describe in words** what the program does.

*[T3]*

1. What is the **output** of the program?

*[T1]*