Rust

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Sample test questions

1. Question: What is the type of x after the following declaration?

   ```
   let x = 3.14;
   ```

   Answer: `f64`

2. Question: What is the output of the following code?

   ```
   let x = 0;
   while x < 10 {
       let x = x + 1;
   }
   println!("{}", x);
   ```

   Answer: There is no output since the code never terminates. The `x` in the guard of the `while` is different from the `x` declared inside the loop.

3. Question: Fix the compile error in the following snippet, assuming `num` is of type `i32`:

   ```
   match num {
       0     => println!("zero"),
       1 | 2 => println!("one or two"),
       3..10 => println!("three to ten")
   }
   ```

   Answer: `match` is exhaustive; it requires that all possible values be considered. Add `_ => println!("something else")` at the end of the `match`.

4. Question: Which of the following is an invalid?

   A:

   ```
   enum Color {
       Red   = 0xff0000,
       Green = 0x00ff00,
       Blue  = 0x0000ff
   }
   ```

   B:

   ```
   enum Point {
       x: f64,
       y: f64
   }
   ```

C:

```
enum Shape {
    Circle(Point, f64),
    Rectangle(Point, Point)
}

impl Shape {
    fn area (&self) -> f64 {
        match *self {
            Circle(_, size) => f64::consts::PI & size & size,
            Rectange(Point {x, y}, Point {x: x2, y: y2}) => (x2 - x) * (y2 - y)
        }
    }
}
```

Answer: B. What is shown is a `struct`.

5. Question: Which of the following is not a valid pointer type?
    - A. Owned
    - B. Managed
    - C. Garbage Collected
    - D. Reference/Borrowed

    Answer: C. Managed pointers are, however, garbage collected.

6. Question: True or False: References are safety checked at runtime, making them significantly more expensive to use than C pointers.

    Answer: False. References are the exact same as C pointers at runtime. All safety checks are performed at compile time.