High Performance Rust Questionnaire

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Hi! I'm Jim Walker, one of the MSc students at EPCC. My dissertation aims to examine if the new programming language, Rust, is suitable for HPC. To thatt end, I have written this questionnaire, to asses how easy it is for HPC programmers such as yourself to understand it.

The questionnaire is simple. There are five questions, which present you with a fragment of rust code. Please describe what each of these functions does to the best of your abilities

Question 1.

```
let mut v1 = vec![2,8];
let v2 = vec![2;8];
```

a) Assigns label v1 to a mutable vector of elements 2 and 8. Assigns label v2 to a vector with 8 elements of value 2.

b) Assigns label v1 to a mutated vector with elements 2 and 8. Assigns label v2 to a vector of 2 elements, both with value 8.

c) Assigns label v1 to a mutatable vector with elements 2 and 8. Assigns label v2 to a vector of 2 elements, both with value 8.

d) Assigns label v1 to a mutable vector of 8 elements of value 2. Assigns label v2 to a vector with elements 2 and 8.

Question 2.

In this question, please assume that v is a vector.

```
v.iter().fold(1, |foo, x| foo * x);
```

a) An iteretator is created over the vector v, which calls the annonymous/lambda function on each element of the vector.

b) Every element of v is multiplied together

c) thing3

d) thing4

Question 3.

```
pub fn foo(&mut self)->T {

    self.a.par_chunks(self.chunk_size)
        .zip(self.b.par_chunks(self.chunk_size))
        .map(|(a,b)| a.iter()
                      .zip(b.iter())
                      .fold(T::from(0).unwrap(), |acc, ele| acc + *ele.0 * *ele.1)
            )
        .sum()
}
```

a) Dot product b) thing2 c) thing3 d) thing4