

Name:

Roll No:

Programming Language Concepts

Quiz 2, II Semester, 2023–2024

20 February, 2024

1. Consider the following Rust functions.

```
(i) fn fact1 (n : i32) -> i32{
    let mut i = 1;
    let mut fact = 1;
    while i <= n {
        fact = fact * i;
        i = i + 1;
    }
    return fact;
}
```

```
(ii) fn fact2 (n : i32) -> i32{
    let mut i = 1;
    let fact = 1;
    while i <= n {
        let fact = fact * i;
        i = i + 1;
    }
    return fact;
}
```

```
(iii) fn fact3 (n : i32) -> i32{
    let mut i = 1;
    let fact = 1;
    while i <= n {
        let fact = fact * i;
        let i = i + 1;
    }
    return fact;
}
```

```
(iv) fn fact4 (n : i32) -> i32{
    let fact = 1;
    while n > 0 {
        let fact = fact * n;
        n = n - 1;
    }
    return fact;
}
```

Fill in each entry in the following table with **Yes** or **No**.

	<i>Compiles</i>	<i>Runs</i>	<i>Terminates</i>	<i>Correct answer</i>
fact1				
fact2				
fact3				
fact4				

... Question 2 on reverse

2. Consider the following Rust functions.

```
(i) fn maxlen1(s1 : String, s2 : String) -> String {
    if s1.len() > s2.len() {s1}
    else {s2}
}

fn main1(){
    let x = String::from("Python");
    let y = String::from("Java");
    let z = maxlen1(x,y);
    println!("maxlen1({}, {}) is {}",
             x,y,z);
}

(ii) fn maxlen2(s1 : String, s2 : String)
      -> (String,String,String) {
    let s3 = if s1.len() > s2.len()
             {s1} else {s2};
    return(s1,s2,s3);
}

fn main2(){
    let x = String::from("Python");
    let y = String::from("Java");
    let (x,y,z) = maxlen2(x,y);
    println!("maxlen2({}, {}) is {}",
             x,y,z);
}

(iii) fn maxlen3(s1 : String, s2 : String)
        -> (String,String,String) {
    let s3 = if s1.len() > s2.len()
             {s1.clone()}
             else {s2.clone()};
    return(s1,s2,s3);
}

fn main3(){
    let x = String::from("Python");
    let y = String::from("Java");
    let (x,y,z) = maxlen3(x,y);
    println!("maxlen3({}, {}) is {}",
             x,y,z);
}

(iv) fn maxlen4(s1 : &str, s2 : &str)
      -> &str {
    if s1.len() > s2.len() {s1}
    else {s2}
}

fn main4(){
    let x = String::from("Python");
    let y = String::from("Java");
    let z = maxlen4(&x,&y);
    println!("maxlen4({}, {}) is {}",
             x,y,z);
}
```

Fill in each entry in the following table with **Yes** or **No**.

	<i>Compiles</i>	<i>Runs</i>	<i>Terminates</i>	<i>Correct answer</i>
maxlen1,main1				
maxlen2,main2				
maxlen3,main3				
maxlen4,main4				