COMP 141: Language Design Criteria
Instructions: In this exercise, we are going to review different PL design criteria.

1 Commenting in C

There are two mechanisms in C to declare comments:

1. Commenting in a single line using `//` at the beginning, and
2. Commenting in potentially multiple lines using `/*` to mark the beginning and `*/` to mark the ending.

For each of the following criteria, argue which commenting mechanism is more preferred.

- readability,
- writability, and
- reliability

2 Explicitly-typed vs. implicitly-typed PLs

In explicit-typed PLs, the programmer is supposed to annotate each data container with some type. This is while, in implicitly-typed PLs there is not such restriction for the programmer. Compare how this language feature affects the following criteria:

- syntax conciseness,
- maintainability, and
- expressiveness

3 Semantic safety in C++ vs. Java

1. Consider the following program in C++. Run it and report the result.

```
int main() {
        int arr[3] = {1,2,3};
        cout<<arr[2]<<endl;
        cout<<arr[4]<<endl;
        return 0;
}
```

2. Consider the same program in Java. Run it and report the result.

```
class Main {
        public static void main(String args[])
        {
                int[] arr = new int[]{1,2,3};
                System.out.println(arr[2]);
                System.out.println(arr[4]);
        }
}
```

3. What can you infer about the semantic safety of C++ vs. Java?

4 Extensibility

Search through the web and find how frequent the following languages get updated.

1. Python
2. Java
3. Haskell (GHC)
4. ML (look for Standard ML of New Jersey: SML/NJ)
5. Clojure
6. Lua