

Solutions and commentary for exam 2025-10-23 in DA4007

Part A: multiple choice

1. A
2. B
3. D
4. B
5. A

Part B: general questions

All C++ code needs the preamble

```
#include <iostream>
using namespace std;
```

but that has been left out in the solutions and is not required in student answers either.

All solutions are examples; there are typically many ways to solve the problems.

6.

- A. `grep error data.txt | wc -l`
- B. `tail data.txt > last10.txt`
- C. `sort data.txt | uniq`

```
7. int main(int argc, char **argv) {
    if (argc != 2) {
        cerr << "Usage: palindrome <word>" << endl;
    }

    string word(argv[1]);
    unsigned length = word.length();
    unsigned half_length = floor(length / 2);

    for (unsigned i=0; i<half_length; i++) {
        if (word[i] != word[length-1-i]) {
            cout << "No" << endl;
            exit(0);
        }
    }
    cout << "Yes" << endl;
}
```

```
8. class Rectangle {
    float width, height;

public:
    Rectangle(float w, float h) : width(w), height(h) {};

    float area() {
        return width * height;
    }
};
```

9. Known mistakes: (1) The code counts only lower case vowels. (2) The for loop makes one iteration too much, since the operator `<=` is used. (3) The return type is a string, although an integer is returned.

10. A.

```
int main() {
    vector<float> nums;
    string line;

    while (getline(cin, line)) {
        float num = stof(line);
        nums.push_back(num);
    }

    sort(nums.begin(), nums.end());
    for (auto it : nums) {
        cout << it << endl;
    }
}
```

B.

```
int main() {
    vector<float> nums;
    string line;

    while (getline(cin, line)) {
        try {
            float num = stof(line);
            nums.push_back(num);
        }
        catch (exception&) {
            cerr << "Invalid input" << endl;
            exit(1);
        }
    }

    sort(nums.begin(), nums.end());
    for (auto it : nums) {
        cout << it << endl;
    }
}
```