Constructors in Modern C++ Solutions

Default initialization

- The following class does not define any constructors

- Why is this problematic?
  - The data members will be default-initialized
  - For built-in types, the initial values will be undefined
  - This gives undefined behaviour

- Write a simple program to demonstrate the problem

```cpp
class refrigerator {
    // Data members
    int temperature;
    bool door_open;
    bool power_on;
};
```

In-class initialization

- Use a Modern C++ feature to rewrite your program and avoid the problem

Delegating constructors

- What is meant by a "delegating" constructor?
  - A delegating constructor calls another constructor to perform the initialization
  - It forwards its arguments to the constructor
- Why is this useful?
  - In a complex class, there may be many constructors which perform similar tasks but take different arguments
  - We can write a constructor which takes all arguments and initializes them
  - The other constructors then forward their arguments to this constructor
  - This avoids having duplicate code in the constructors