

# Declaration and Initialization Solutions

# Universal Initialization

- What is meant by universal initialization in C++?
  - Universal or brace initialization means that we put the initial value(s) of a variable in braces {}
  - This works with all built-in types and classes, provided the constructor accepts the given number of arguments
- Write a program which demonstrates universal initialization of built-in types and objects with single and multiple initial values

# Advantages of Universal Initialization

- What are the advantages of universal initialization?
  - The same syntax can be used to initialize all types
  - Easy initialization of containers with multiple different values
  - Narrowing conversions are caught by the compiler
  - Avoids the "most vexing parse"

# Type Alias

- What is meant by a "type alias"? Why is it useful?
  - A type alias gives another name for a type
  - It can be used to simplify code which uses complex types such as function pointers or nested containers
- Rewrite the following type alias using the Modern C++ alternative

```
typedef vector<int> IntVec;  
vector<IntVec> vec_of_vec;
```
- Compile your answer to check it is correct