async Function Solutions

std::async()

- Briefly describe the std::async() function
  - std::async() allows us to manage tasks at a higher-level than using std::thread
  - We can execute a task with std::async() which runs in the background
  - This allows us to do other work while the task is running
  - Alternatively, the task can run synchronously in the thread which starts it
- Write a simple "Hello, World!" type program which uses std::async()

Returning a Value

- What does std::async() return?
  - An std::future object
  - This contains the result of the task
  - (the return value from the task function)
- Write a program which uses std::async() to start a task and displays the returned value

std::async() and Exceptions

- What happens if the task function throws an exception?
  - The exception will be stored in the returned std::future object
  - If we call get() on the returned future, the exception will be re-thrown
- Modify your program so that the task function throws an exception
- Check that your program handles the exception correctly