

Running Address Sanitizer (ASan)

Overview

This project utilizes Address Sanitizer (ASan) to detect memory-related issues and ensure code correctness in the MrSnowman project. The `run_asan.sh` script automates the process of enabling ASan, compiling the code with the necessary flags, and running the application to detect memory errors.

Enabling Address Sanitizer

To enable Address Sanitizer for the project, execute the `run_asan.sh` script:

```
./run_asan.sh
```

This script modifies the `MrSnowman.pro` file to include ASan flags, cleans the project, reconfigures it using `qmake`, rebuilds the project with ASan enabled, and then runs the application to detect memory errors.

Address Sanitizer Process

The `run_asan.sh` script performs the following steps:

- **Modify .pro File:**
 - The script appends the necessary ASan flags (`-fsanitize=address`) to the `MrSnowman.pro` file to enable ASan during compilation and linking.
- **Clean and Rebuild Project:**
 - The project is cleaned, reconfigured using `qmake`, and then rebuilt using `make` with ASan flags.
- **Run Application with Address Sanitizer:**
 - The script executes the application with ASan enabled to detect memory-related issues.

Interpreting Address Sanitizer Results

After running the `run_asan.sh` script, the terminal output will display any memory-related issues detected by Address Sanitizer. An example output indicating a memory error could look like this:

```
==55599==ERROR: AddressSanitizer: heap-buffer-overflow on address  
0x00010a70241a ...
```

In this example:

- **heap-buffer-overflow:** Indicates that a buffer overflow occurred, writing beyond the allocated memory block.

- **WRITE of size 52:** The program tried to write 52 bytes of data to the buffer, exceeding its allocated size.
- **SUMMARY:** Provides a summary of the ASan error, indicating a heap-buffer-overflow, and aborts the program.

If no issues are found, the application will run normally without any ASan error messages.

Note

It's important to note that the Qt-related messages displayed in the terminal output, such as window positions and font operations, are unrelated to Address Sanitizer (ASan) and are provided for informational purposes only.