Software Synthesis for Embedded Processors

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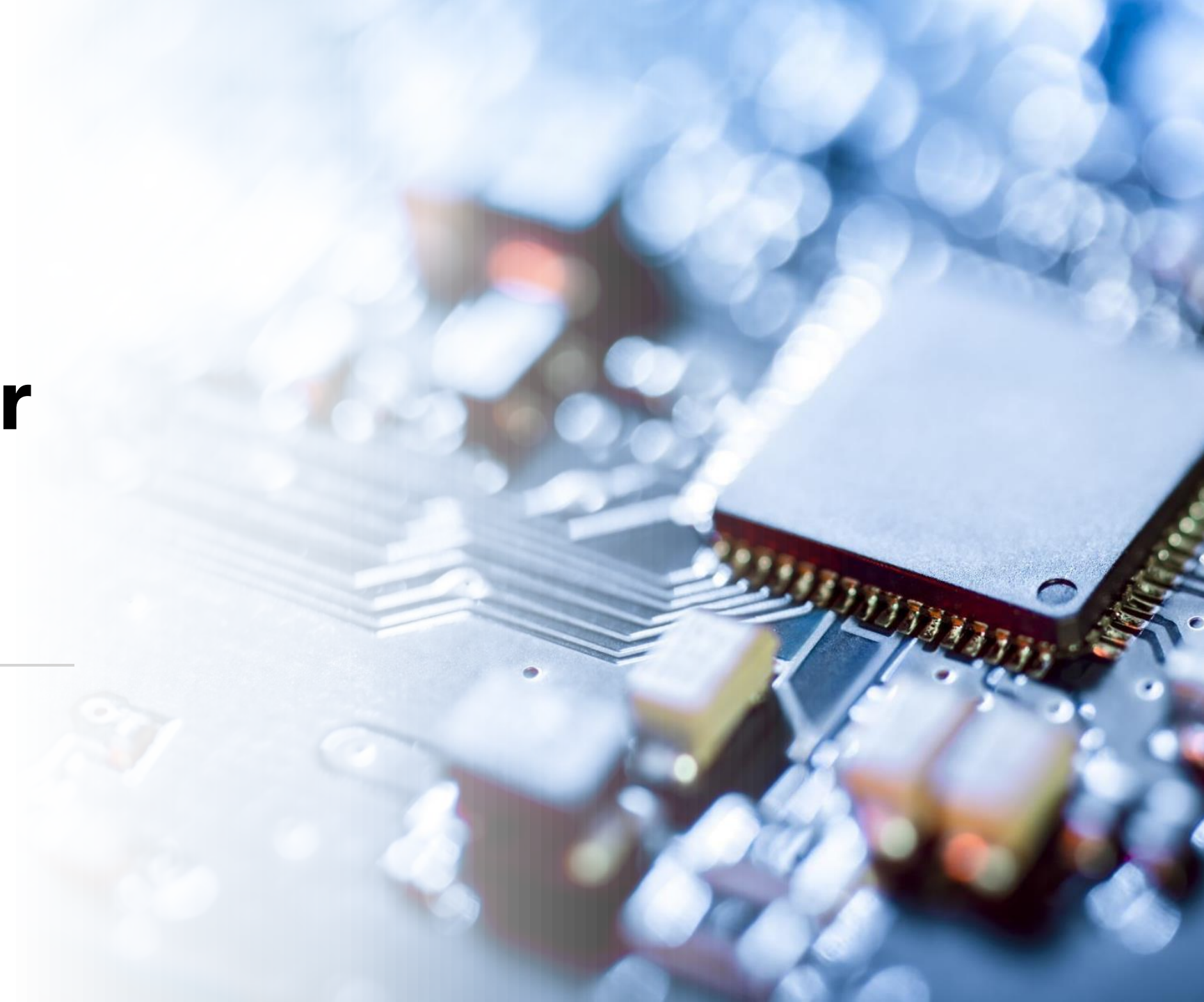


Motivation

- Increasing demand for applications using embedded systems creates need for more software synthesis.
- Need for connect between human readable language and machine readable language.
- Easier and non-tedious programming process.

Embedded Processors

- RISC Architecture
- Harvard Architecture

High Level Programming Languages

- Human readable languages
- Easier to code
- Needs compilers
- Examples : C, Python and Java

Processes in a compiler

- Lexical analysis
- Syntax analysis
- Semantic analysis
- Intermediate representation code generation
- Optimization
- Output code

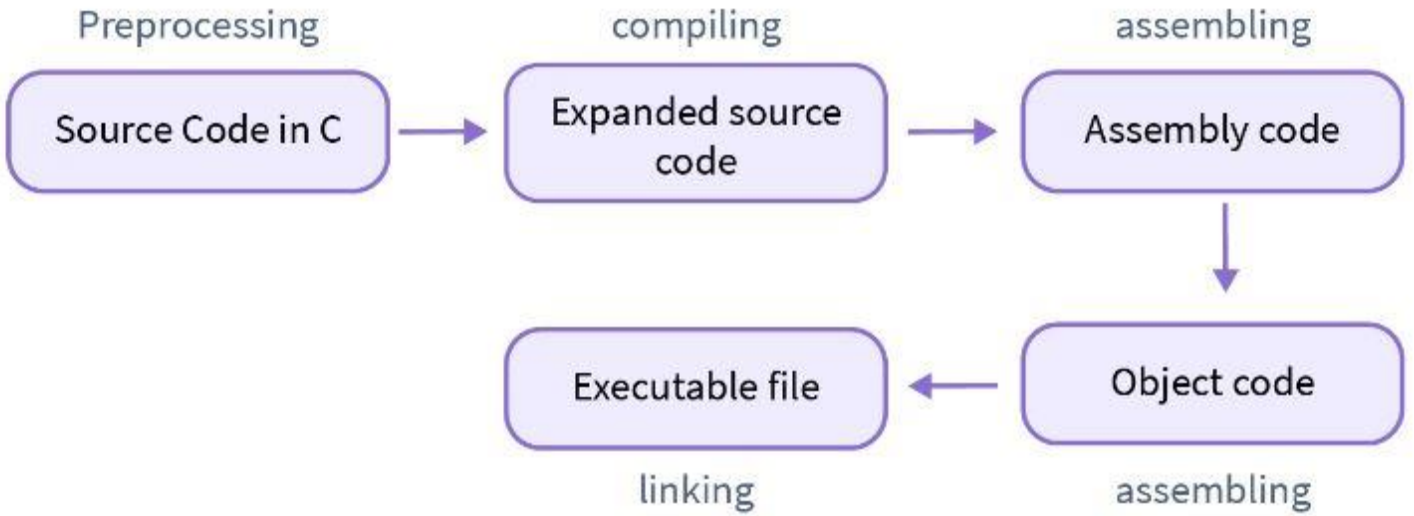
Pre-processing

- Removing Comments
- Macro Expansion

#define PI 3.141592653589793

- File Inclusion

#include "math.h"



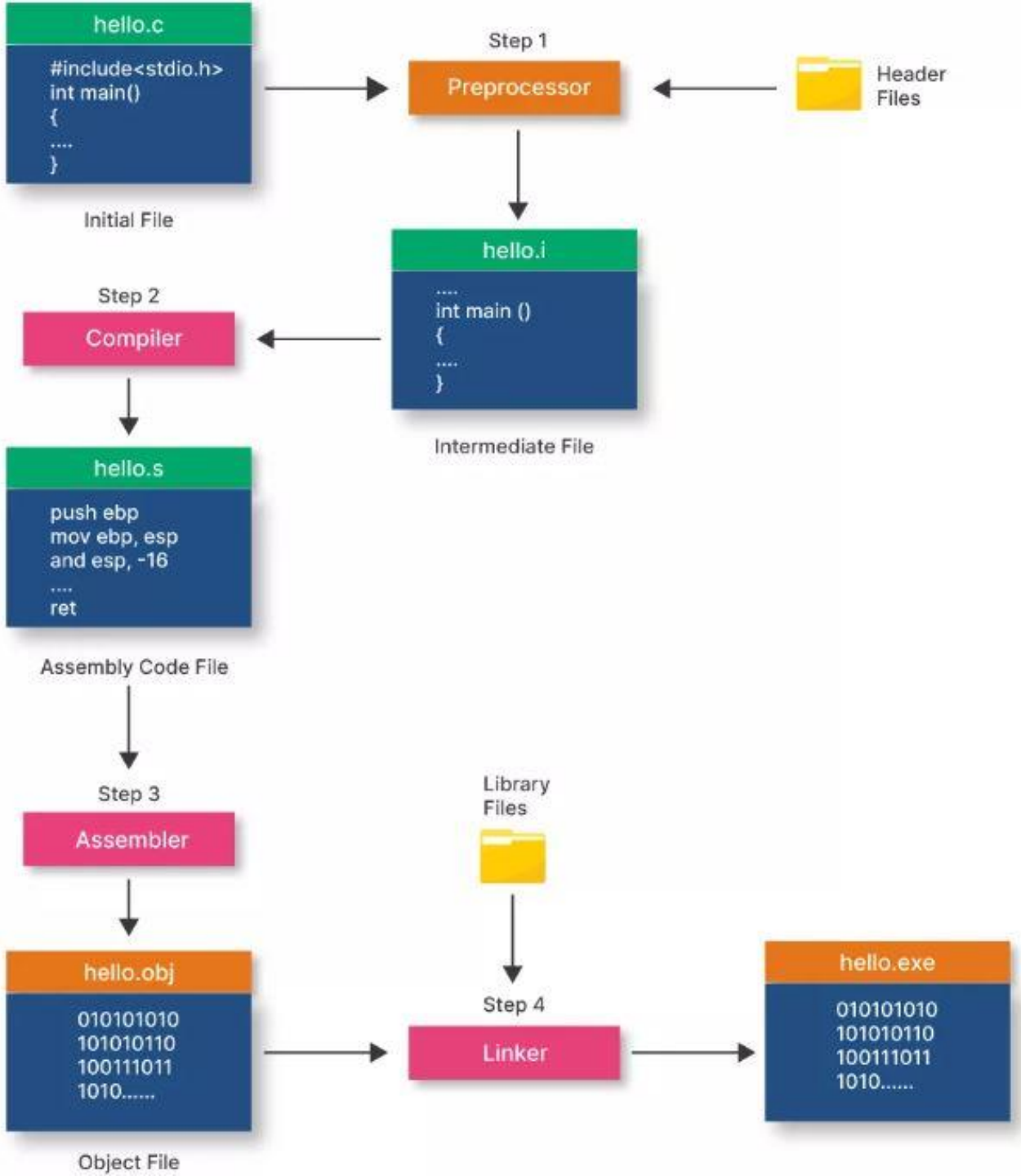
Compilation

- Code Compilation - .obj file
- Assembler - machine code
- Linking

```c
#include <stdio.h>

int main() {
printf("Hello, World!\n");

return 0;
}
```



Conclusion

- Embedded Processors
- High Level Programming languages
- Compiler

Thankyou