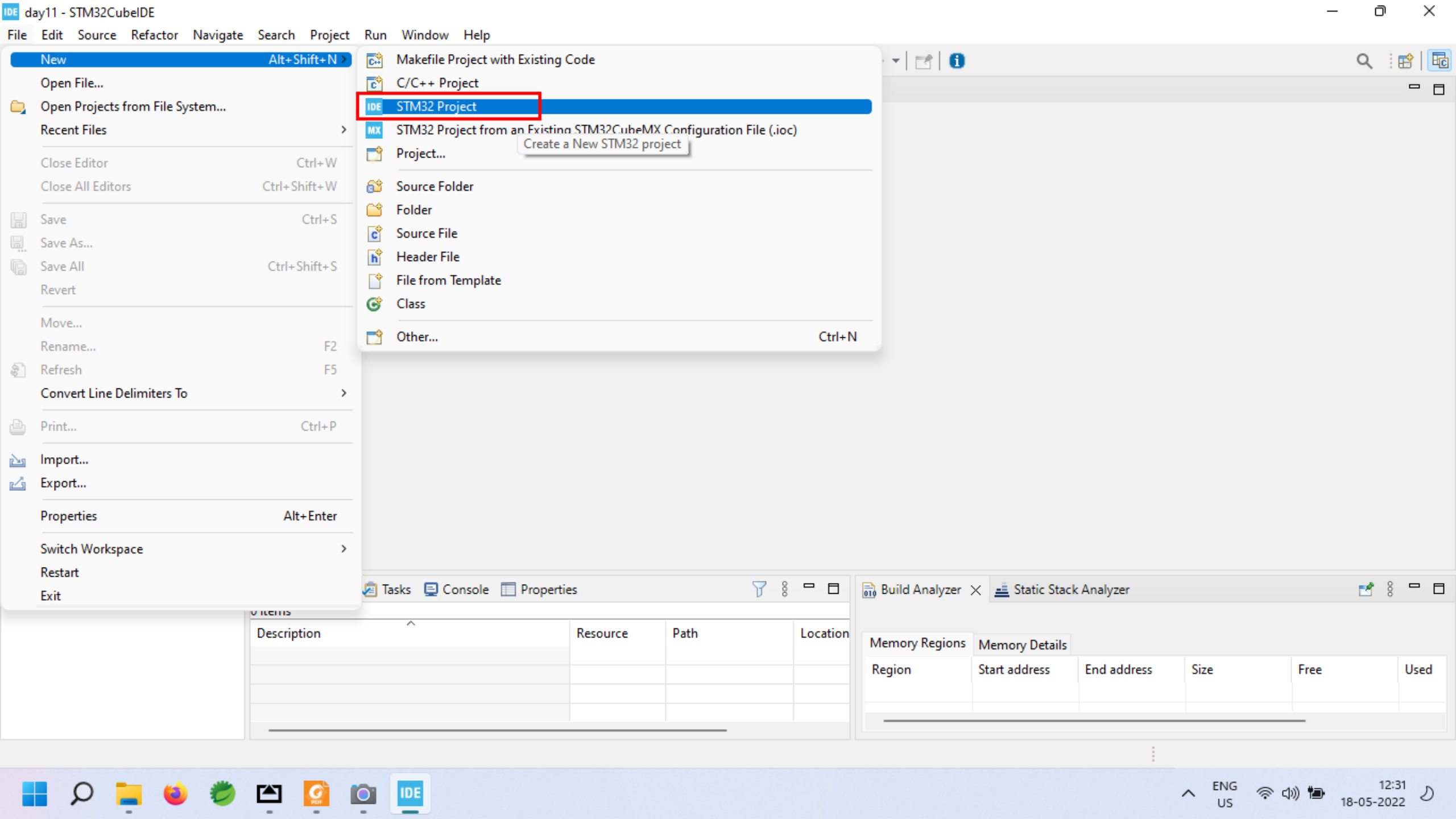
STM32CubeIDE *Hello World*

PG-DESD @ SunBeam Infotech


day11 - STM32CubeIDE
File Edit Source Refactor Navigate Search Project Run Window Help
New Alt+Shift+N
Open File...
Open Projects from File System...
Recent Files
Close Editor Ctrl+W
Close All Editors Ctrl+Shift+W
Save Ctrl+S
Save As...
Save All Ctrl+Shift+S
Revert
Move...
Rename... F2
Refresh F5
Convert Line Delimiters To
Print... Ctrl+P
Import...
Export...
Properties Alt+Enter
Switch Workspace
Restart
Exit
Makefile Project with Existing Code
C/C++ Project
STM32 Project
STM32 Project from an Existing STM32CubeMX Configuration File (.ioc)
Create a New STM32 project
Project...
Source Folder
Folder
Source File
Header File
File from Template
Class
Other... Ctrl+N
Tasks Console Properties
Description Resource Path Location
Build Analyzer Static Stack Analyzer
Memory Regions Memory Details
Region Start address End address Size Free Used
ENG US
12:31
18-05-2022

STM32 Project

Target Selection

Select STM32 target or STM32Cube example

IDE

MCU/MPU Selector | Board Selector | Example Selector | Cross Selector

Board Filters

Commercial Part Number: STM32F407G-DISC1

PRODUCT INFO

MEMORY

FEATURES

Features | Large Picture | Docs & Resources | Datasheet | Buy

STM32F4 Series

STM32F407G-DISC1

Discovery kit with STM32F407VG MCU * New order code STM32F407G-DISC1 (replaces STM32F4DISCOVERY)

ACTIVE
Product is in mass production

Part Number : STM32F4DISCOVERY
Commercial Part Number : STM32F407G-DISC1

Unit Price (US$) : 19.9

Mounted Device : STM32F407VGT6

The STM32F4DISCOVERY Discovery kit leverages the capabilities of the STM32F407 high-performance microcontrollers, to allow users to develop audio applications easily. It includes an ST-LINK/V2-A embedded debug tool, one ST-MEMS digital accelerometer, one digital microphone, one audio DAC with integrated class D speaker driver, LEDs, push-buttons, and a USB OTG Micro-AB connector

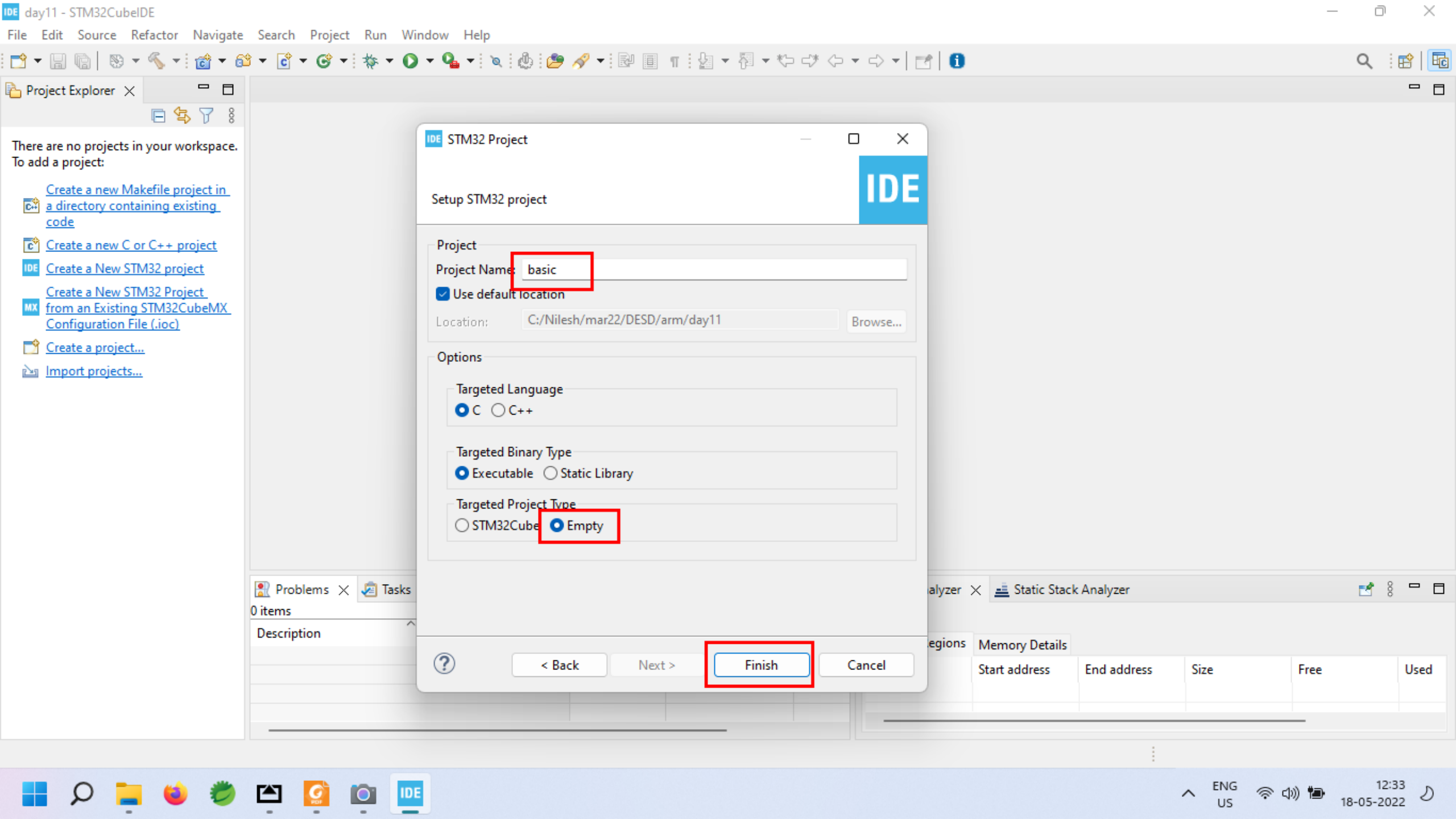
Boards List: 1 item

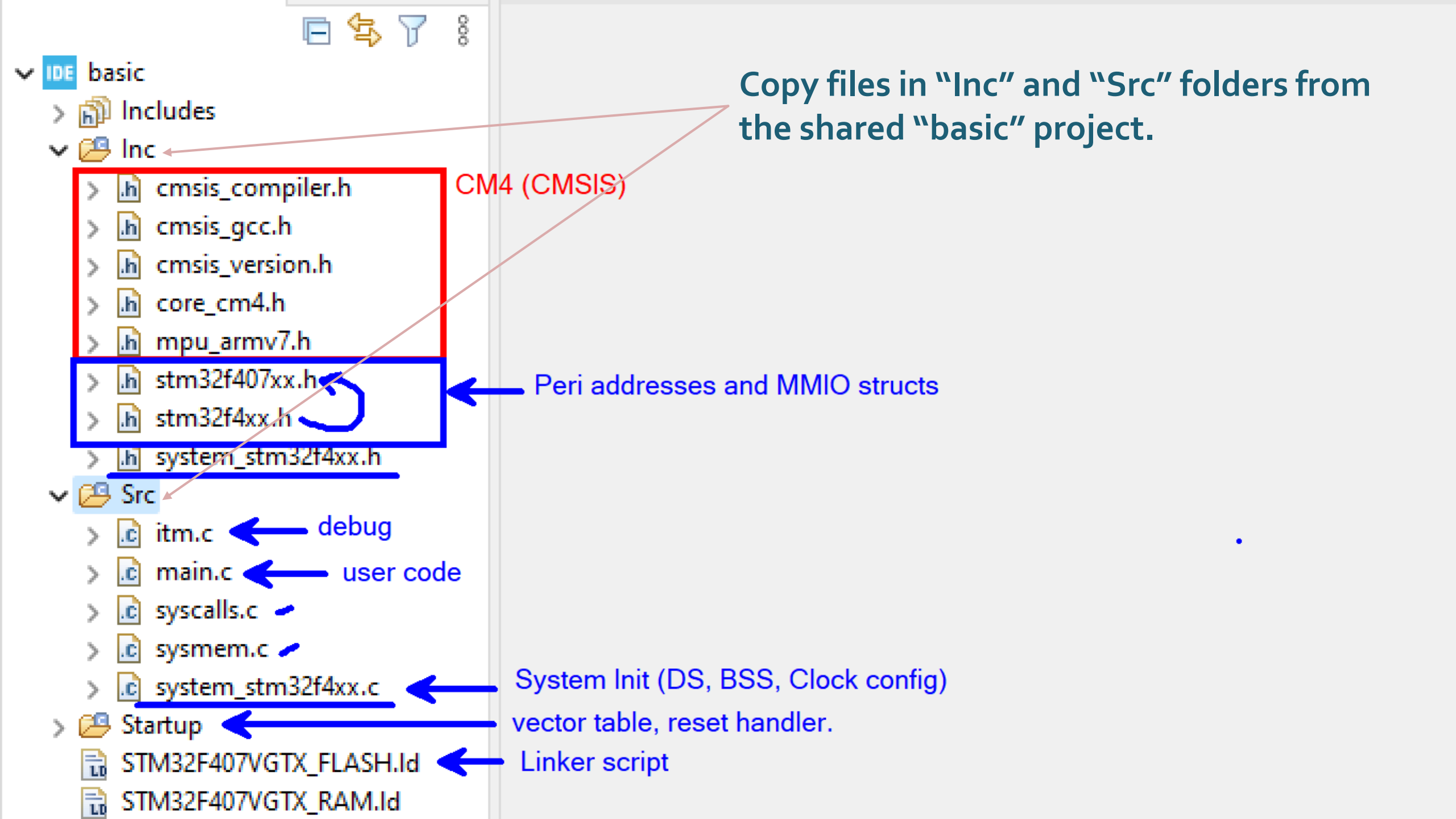
Export

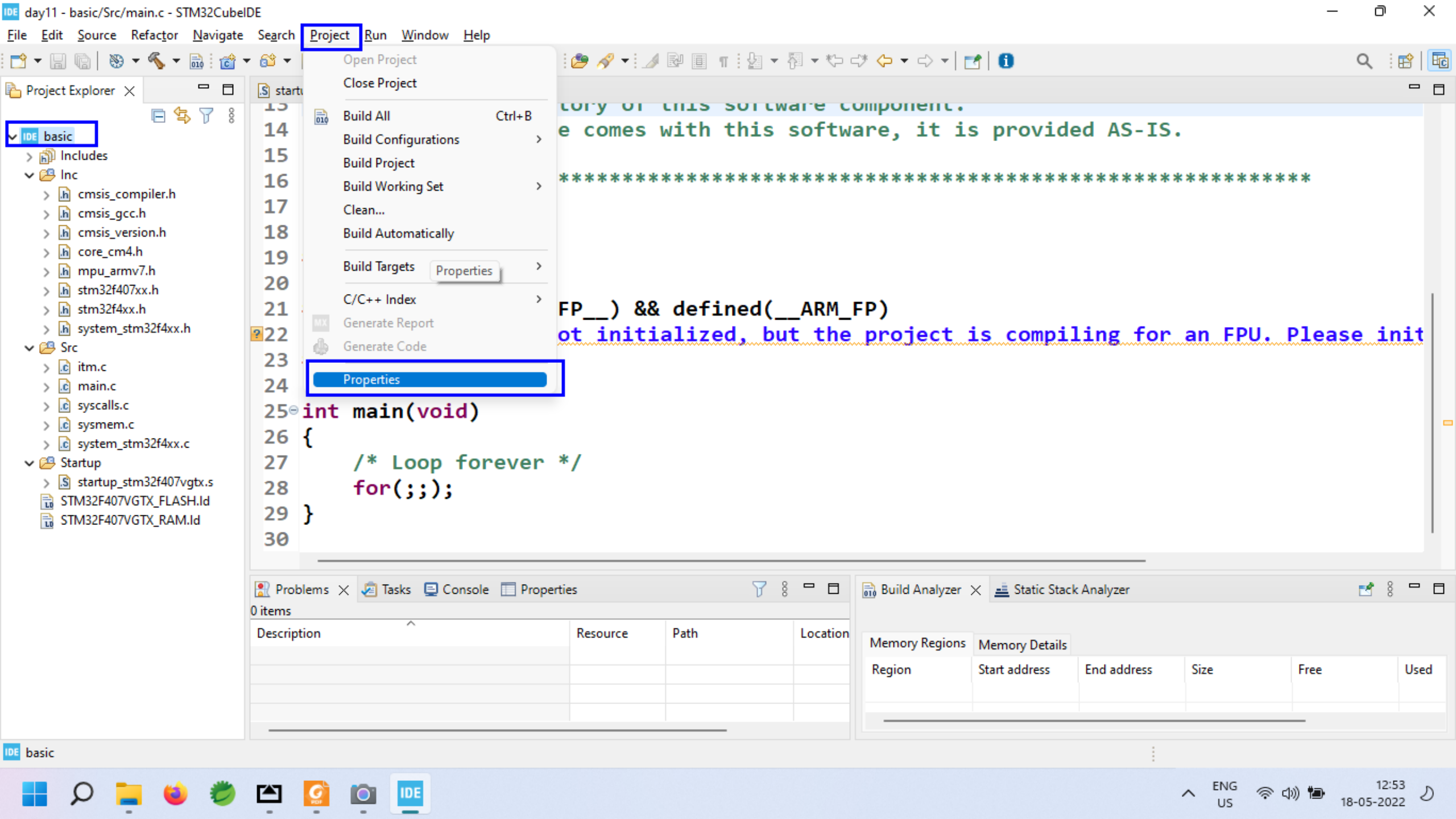
*	Overview	Commercial Part No	Type	Marketing Status	Unit Price (US$)	Mounted Device
☆		STM32F407G-DISC1	Discovery Kit	Active	19.9	STM32F407VGT6

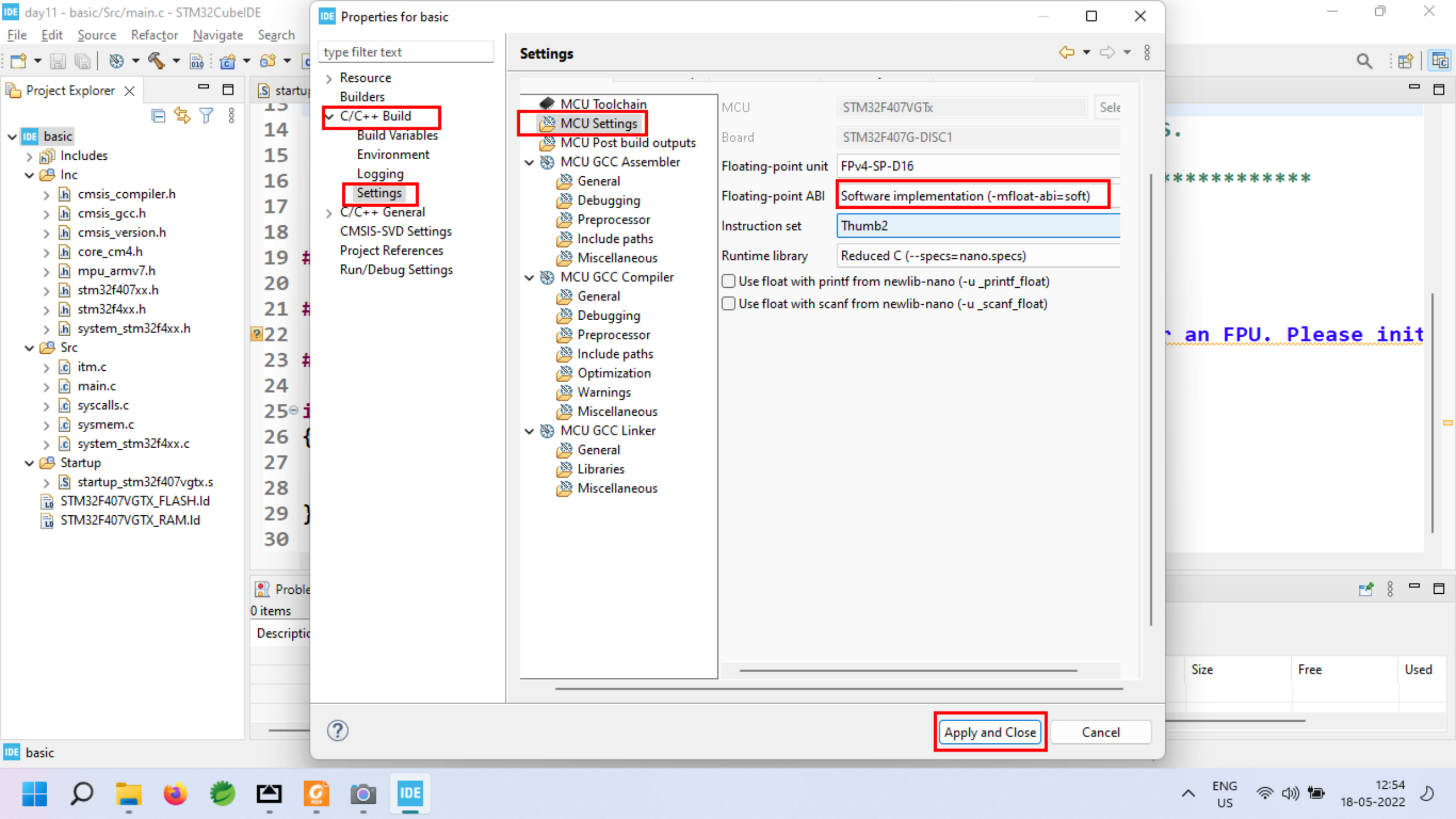
< Back | Next > | Finish | Cancel

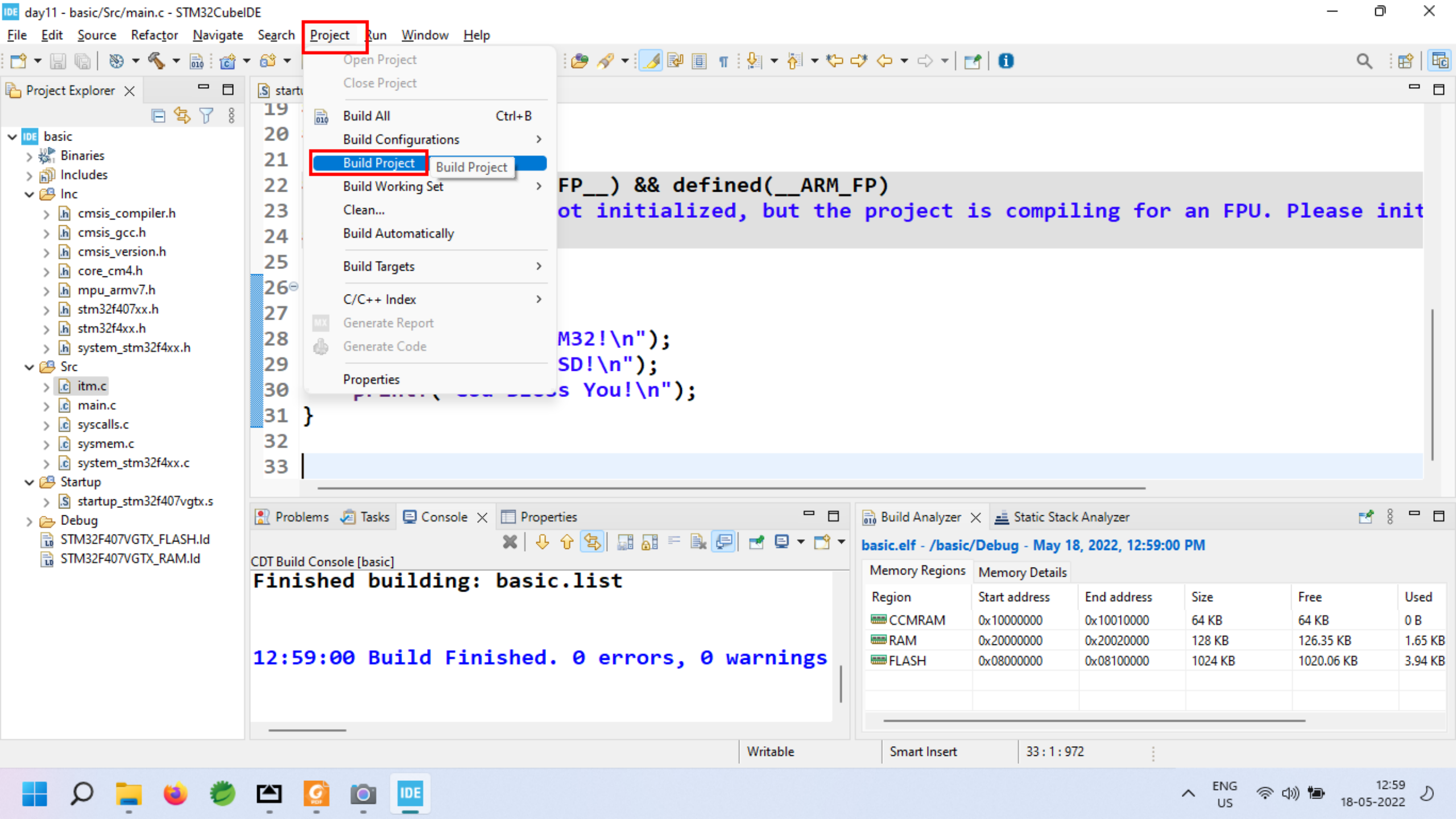
ENG US 12:32 18-05-2022

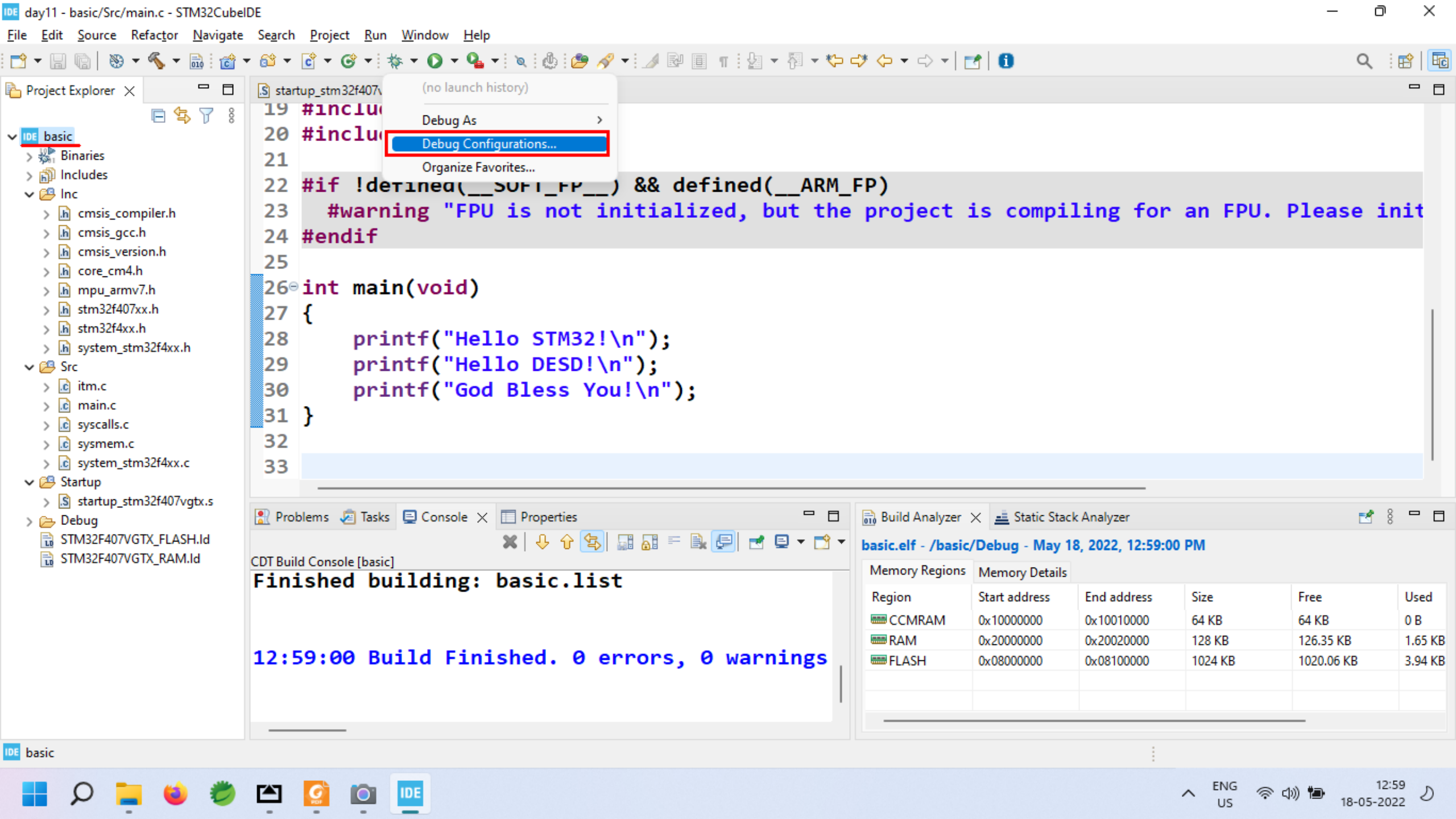

day11 - STM32CubeIDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
There are no projects in your workspace.
To add a project:
Create a new Makefile project in a directory containing existing code
Create a new C or C++ project
Create a New STM32 project
Create a New STM32 Project from an Existing STM32CubeMX Configuration File (.ioc)
Create a project...
Import projects...
STM32 Project
Setup STM32 project
IDE
Project
Project Name: basic
Use default location
Location: C:/Nilesh/mar22/DESD/arm/day11
Browse...
Options
Targeted Language
C C++
Targeted Binary Type
Executable Static Library
Targeted Project Type
STM32Cube Empty
< Back
Next >
Finish
Cancel
Problems
Tasks
0 items
Description
Static Stack Analyzer
Memory Details
Start address
End address
Size
Free
Used
ENG
US
12:33
18-05-2022

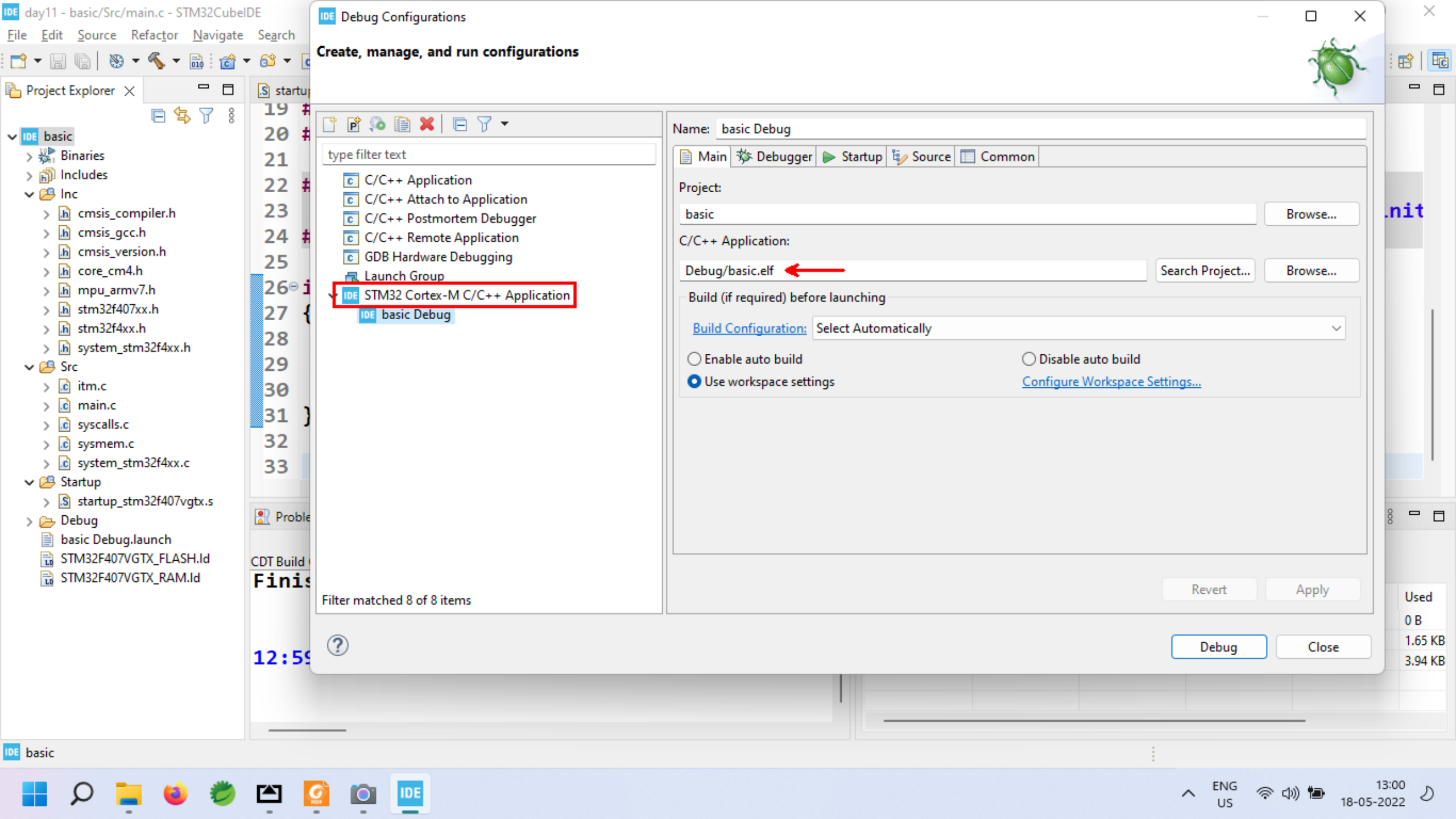

basic
Includes
Inc
cmsis_compiler.h
cmsis_gcc.h
cmsis_version.h
core_cm4.h
mpu_armv7.h
stm32f407xx.h
stm32f4xx.h
system_stm32f4xx.h
Src
itm.c
main.c
syscalls.c
sysmem.c
system_stm32f4xx.c
Startup
STM32F407VGTX_FLASH.ld
STM32F407VGTX_RAM.ld
Copy files in "Inc" and "Src" folders from the shared "basic" project.
CM4 (CMSIS)
Peri addresses and MMIO structs
debug
user code
System Init (DS, BSS, Clock config)
vector table, reset handler.
Linker script

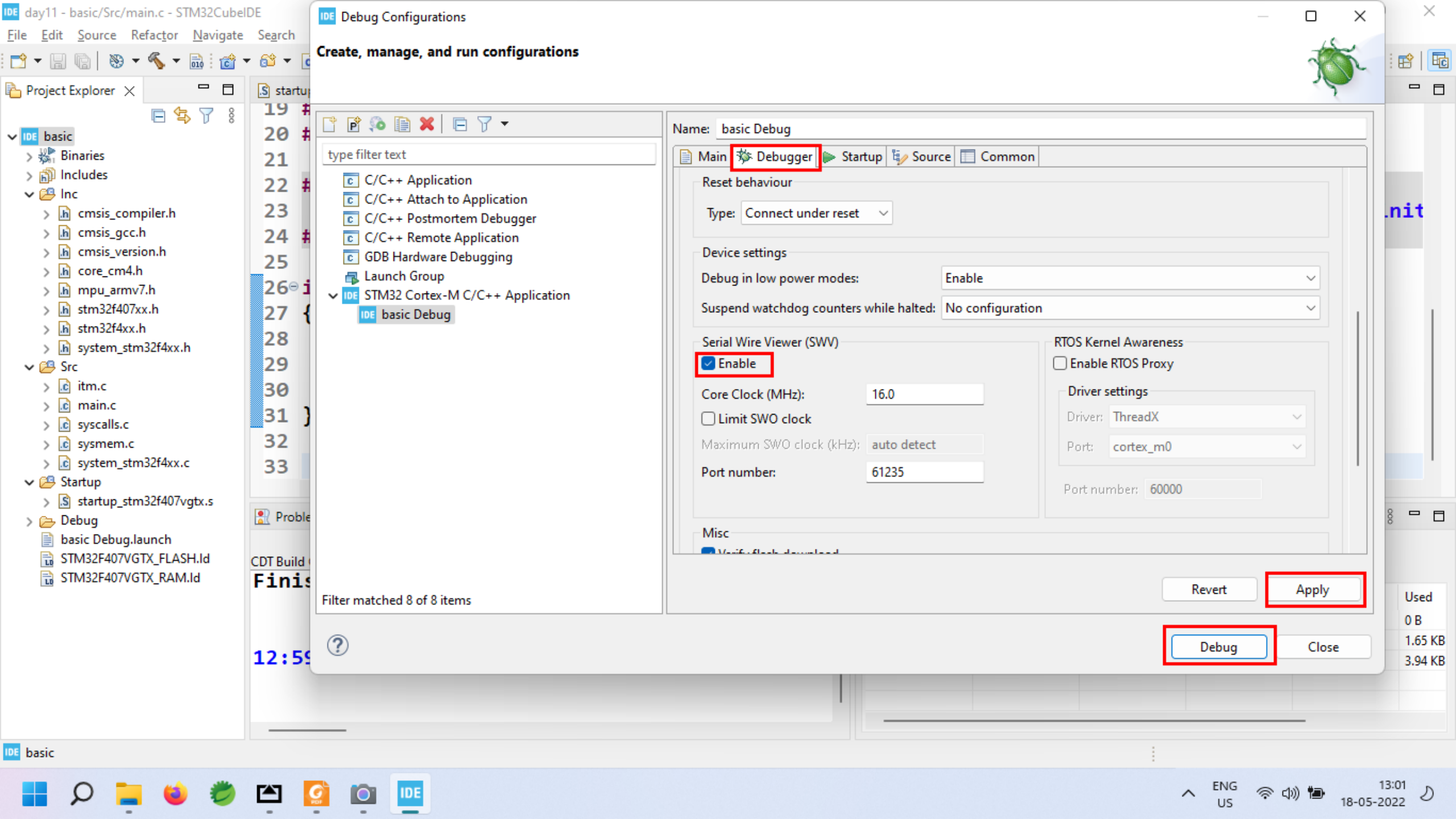

day11 - basic/Src/main.c - STM32CubeIDE
File Edit Source Refactor Navigate Search Project Run Window Help
Open Project
Close Project
Build All Ctrl+B
Build Configurations
Build Project
Build Working Set
Clean...
Build Automatically
Build Targets
Properties
C/C++ Index
Generate Report
Generate Code
Properties
Project Explorer
basic
Includes
Inc
cmsis_compiler.h
cmsis_gcc.h
cmsis_version.h
core_cm4.h
mpu_armv7.h
stm32f407xx.h
stm32f4xx.h
system_stm32f4xx.h
Src
itm.c
main.c
syscalls.c
sysmem.c
system_stm32f4xx.c
Startup
startup_stm32f407vgtx.s
STM32F407VGTX_FLASH.ld
STM32F407VGTX_RAM.ld
e comes with this software, it is provided AS-IS.
FP__) && defined(__ARM_FP)
ot initialized, but the project is compiling for an FPU. Please init
int main(void)
{
/* Loop forever */
for(;;);
}
Problems
Tasks
Console
Properties
0 items
Description
Resource
Path
Location
Build Analyzer
Static Stack Analyzer
Memory Regions
Memory Details
Region
Start address
End address
Size
Free
Used
basic
ENG
US
12:53
18-05-2022

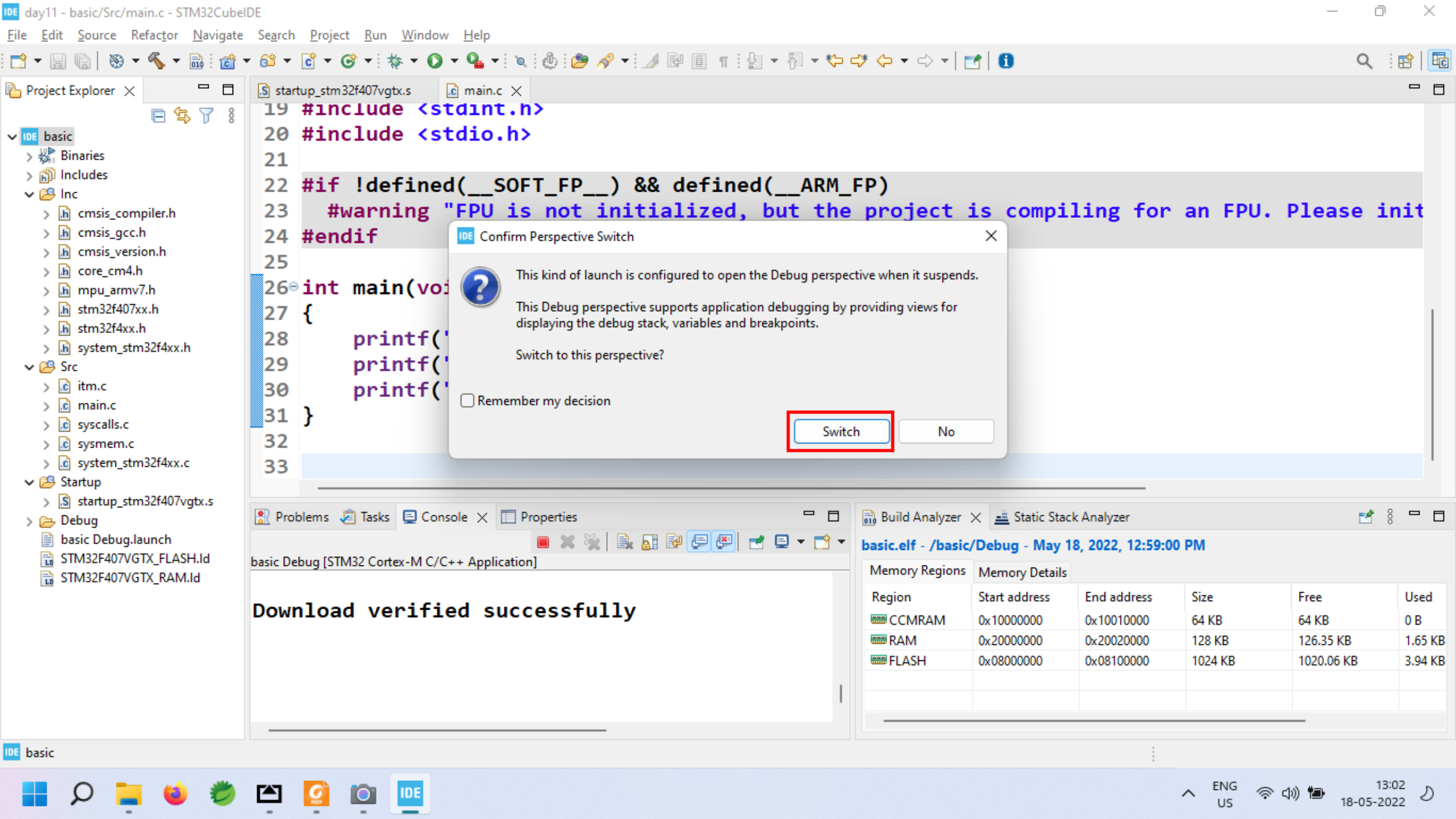

day11 - basic/Src/main.c - STM32CubeIDE
File Edit Source Refactor Navigate Search
Project Explorer
basic
Includes
Inc
cmsis_compiler.h
cmsis_gcc.h
cmsis_version.h
core_cm4.h
mpu_armv7.h
stm32f407xx.h
stm32f4xx.h
system_stm32f4xx.h
Src
itm.c
main.c
syscalls.c
sysmem.c
system_stm32f4xx.c
Startup
startup_stm32f407vgtx.s
STM32F407VGTX_FLASH.ld
STM32F407VGTX_RAM.ld
Properties for basic
type filter text
Resource
Builders
C/C++ Build
Build Variables
Environment
Logging
Settings
C/C++ General
CMSIS-SVD Settings
Project References
Run/Debug Settings
Settings
MCU Toolchain
MCU Settings
MCU Post build outputs
MCU GCC Assembler
General
Debugging
Preprocessor
Include paths
Miscellaneous
MCU GCC Compiler
General
Debugging
Preprocessor
Include paths
Optimization
Warnings
Miscellaneous
MCU GCC Linker
General
Libraries
Miscellaneous
MCU
STM32F407VGTx
Board
STM32F407G-DISC1
Floating-point unit
FPv4-SP-D16
Floating-point ABI
Software implementation (-mfloat-abi=soft)
Instruction set
Thumb2
Runtime library
Reduced C (--specs=nano.specs)
Use float with printf from newlib-nano (-u _printf_float)
Use float with scanf from newlib-nano (-u _scanf_float)
Apply and Close
Cancel
0 items
Size
Free
Used
basic
ENG
US
12:54
18-05-2022

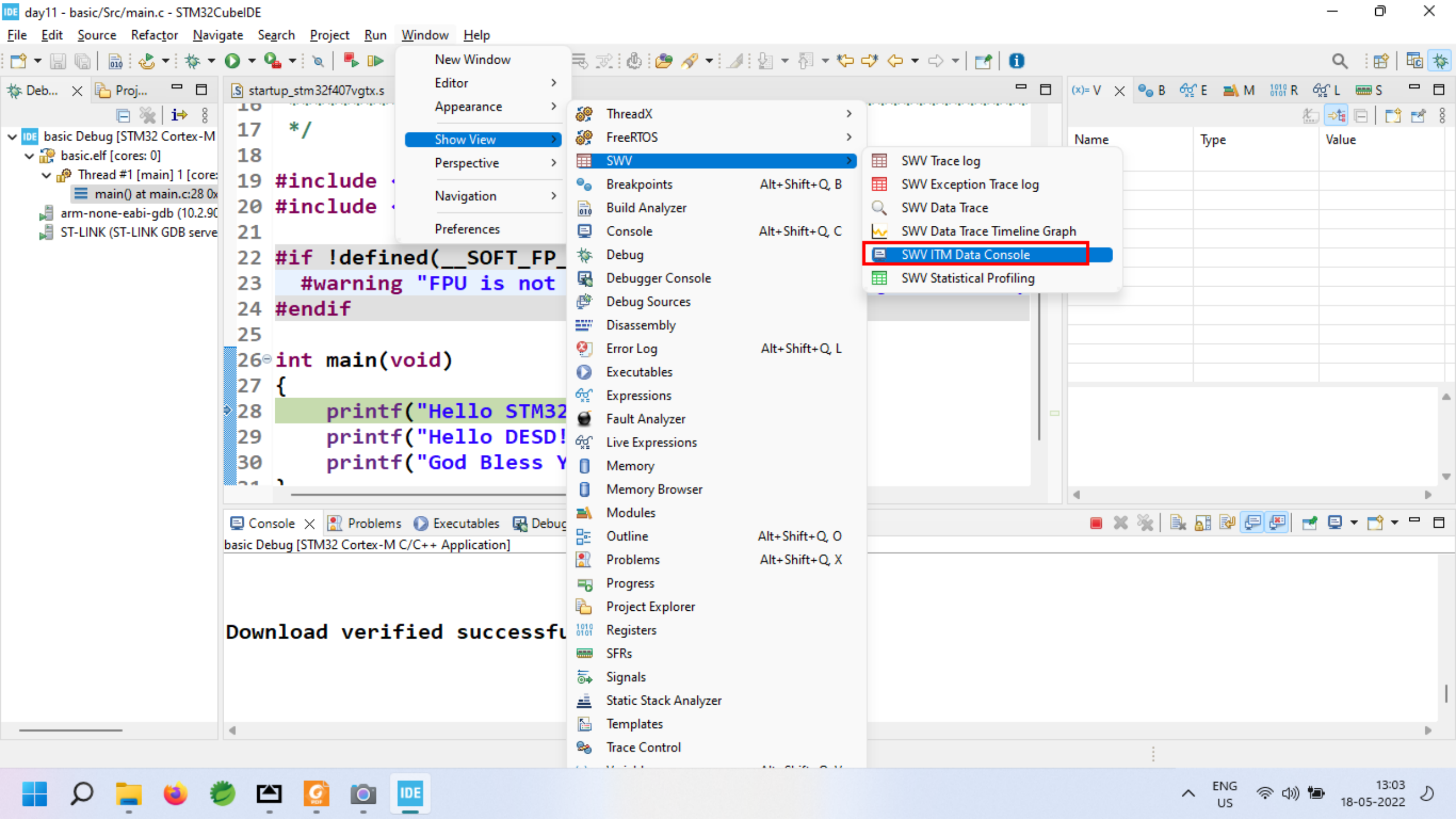

day11 - basic/Src/main.c - STM32CubeIDE
File Edit Source Refactor Navigate Search Project Run Window Help
Open Project
Close Project
Build All Ctrl+B
Build Configurations
Build Project
Build Working Set
Clean...
Build Automatically
Build Targets
C/C++ Index
Generate Report
Generate Code
Properties
Project Explorer
basic
Binaries
Includes
Inc
cmsis_compiler.h
cmsis_gcc.h
cmsis_version.h
core_cm4.h
mpu_armv7.h
stm32f407xx.h
stm32f4xx.h
system_stm32f4xx.h
Src
itm.c
main.c
syscalls.c
sysmem.c
system_stm32f4xx.c
Startup
startup_stm32f407vgtx.s
Debug
STM32F407VGTX_FLASH.ld
STM32F407VGTX_RAM.ld
FP__) && defined(__ARM_FP)
ot initialized, but the project is compiling for an FPU. Please init
M32!\n");
SD!\n");
s You!\n");
}
Problems Tasks Console Properties
CDT Build Console [basic]
Finished building: basic.list
12:59:00 Build Finished. 0 errors, 0 warnings
Build Analyzer Static Stack Analyzer
basic.elf - /basic/Debug - May 18, 2022, 12:59:00 PM
Memory Regions Memory Details
Region Start address End address Size Free Used
CCMRAM 0x10000000 0x10010000 64 KB 64 KB 0 B
RAM 0x20000000 0x20020000 128 KB 126.35 KB 1.65 KB
FLASH 0x08000000 0x08100000 1024 KB 1020.06 KB 3.94 KB
Writable
Smart Insert
33 : 1 : 972
ENG US
12:59 18-05-2022


day11 - basic/Src/main.c - STM32CubeIDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
basic
Binaries
Includes
Inc
cmsis_compiler.h
cmsis_gcc.h
cmsis_version.h
core_cm4.h
mpu_armv7.h
stm32f407xx.h
stm32f4xx.h
system_stm32f4xx.h
Src
itm.c
main.c
syscalls.c
sysmem.c
system_stm32f4xx.c
Startup
startup_stm32f407vgtx.s
Debug
STM32F407VGTX_FLASH.ld
STM32F407VGTX_RAM.ld
(no launch history)
Debug As
Debug Configurations...
Organize Favorites...
#if !defined(__SOFT_FP__) && defined(__ARM_FP)
#warning "FPU is not initialized, but the project is compiling for an FPU. Please init
#endif
int main(void)
{
printf("Hello STM32!\n");
printf("Hello DESD!\n");
printf("God Bless You!\n");
}
Problems Tasks Console Properties
CDT Build Console [basic]
Finished building: basic.list
12:59:00 Build Finished. 0 errors, 0 warnings
Build Analyzer Static Stack Analyzer
basic.elf - /basic/Debug - May 18, 2022, 12:59:00 PM
Memory Regions Memory Details
Region Start address End address Size Free Used
CCMRAM 0x10000000 0x10010000 64 KB 64 KB 0 B
RAM 0x20000000 0x20020000 128 KB 126.35 KB 1.65 KB
FLASH 0x08000000 0x08100000 1024 KB 1020.06 KB 3.94 KB
basic
ENG US
12:59 18-05-2022


day11 - basic/Src/main.c - STM32CubeIDE
File Edit Source Refactor Navigate Search
Project Explorer
basic
Binaries
Includes
Inc
cmsis_compiler.h
cmsis_gcc.h
cmsis_version.h
core_cm4.h
mpu_armv7.h
stm32f407xx.h
stm32f4xx.h
system_stm32f4xx.h
Src
itm.c
main.c
syscalls.c
sysmem.c
system_stm32f4xx.c
Startup
startup_stm32f407vgtx.s
Debug
basic Debug.launch
STM32F407VGTX_FLASH.ld
STM32F407VGTX_RAM.ld
Debug Configurations
Create, manage, and run configurations
type filter text
C/C++ Application
C/C++ Attach to Application
C/C++ Postmortem Debugger
C/C++ Remote Application
GDB Hardware Debugging
Launch Group
STM32 Cortex-M C/C++ Application
basic Debug
Filter matched 8 of 8 items
Name: basic Debug
Main
Debugger
Startup
Source
Common
Project:
basic
Browse...
C/C++ Application:
Debug/basic.elf
Search Project...
Browse...
Build (if required) before launching
Build Configuration:
Select Automatically
Enable auto build
Disable auto build
Use workspace settings
Configure Workspace Settings...
Revert
Apply
Debug
Close
CDT Build
Finis
12:59
Used
0 B
1.65 KB
3.94 KB
basic
ENG
US
13:00
18-05-2022


day11 - basic/Src/main.c - STM32CubeIDE
File Edit Source Refactor Navigate Search
Project Explorer
basic
Binaries
Includes
Inc
cmsis_compiler.h
cmsis_gcc.h
cmsis_version.h
core_cm4.h
mpu_armv7.h
stm32f407xx.h
stm32f4xx.h
system_stm32f4xx.h
Src
itm.c
main.c
syscalls.c
sysmem.c
system_stm32f4xx.c
Startup
startup_stm32f407vgtx.s
Debug
basic Debug.launch
STM32F407VGTX_FLASH.ld
STM32F407VGTX_RAM.ld
Debug Configurations
Create, manage, and run configurations
type filter text
C/C++ Application
C/C++ Attach to Application
C/C++ Postmortem Debugger
C/C++ Remote Application
GDB Hardware Debugging
Launch Group
STM32 Cortex-M C/C++ Application
basic Debug
Filter matched 8 of 8 items
Name: basic Debug
Main
Debugger
Startup
Source
Common
Reset behaviour
Type: Connect under reset
Device settings
Debug in low power modes: Enable
Suspend watchdog counters while halted: No configuration
Serial Wire Viewer (SWV)
Enable
Core Clock (MHz): 16.0
Limit SWO clock
Maximum SWO clock (kHz): auto detect
Port number: 61235
RTOS Kernel Awareness
Enable RTOS Proxy
Driver settings
Driver: ThreadX
Port: cortex_m0
Port number: 60000
Misc
Revert
Apply
Debug
Close
CDT Build
Finis
12:59
Used
0 B
1.65 KB
3.94 KB
basic
ENG
US
13:01
18-05-2022


day11 - basic/Src/main.c - STM32CubeIDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
basic
Binaries
Includes
Inc
cmsis_compiler.h
cmsis_gcc.h
cmsis_version.h
core_cm4.h
mpu_armv7.h
stm32f407xx.h
stm32f4xx.h
system_stm32f4xx.h
Src
itm.c
main.c
syscalls.c
sysmem.c
system_stm32f4xx.c
Startup
startup_stm32f407vgtx.s
Debug
basic Debug.launch
STM32F407VGTX_FLASH.ld
STM32F407VGTX_RAM.ld
startup_stm32f407vgtx.s
main.c
#include <stdint.h>
#include <stdio.h>
#if !defined(__SOFT_FP__) && defined(__ARM_FP)
#warning "FPU is not initialized, but the project is compiling for an FPU. Please init
#endif
int main(voi
{
printf("
printf("
printf("
}
Confirm Perspective Switch
This kind of launch is configured to open the Debug perspective when it suspends.
This Debug perspective supports application debugging by providing views for displaying the debug stack, variables and breakpoints.
Switch to this perspective?
Remember my decision
Switch
No
Problems Tasks Console Properties
basic Debug [STM32 Cortex-M C/C++ Application]
Download verified successfully
Build Analyzer
Static Stack Analyzer
basic.elf - /basic/Debug - May 18, 2022, 12:59:00 PM
Memory Regions
Memory Details
Region Start address End address Size Free Used
CCMRAM 0x10000000 0x10010000 64 KB 64 KB 0 B
RAM 0x20000000 0x20020000 128 KB 126.35 KB 1.65 KB
FLASH 0x08000000 0x08100000 1024 KB 1020.06 KB 3.94 KB
basic
ENG US
13:02
18-05-2022


day11 - basic/Src/main.c - STM32CubeIDE
File Edit Source Refactor Navigate Search Project Run Window Help
New Window
Editor
Appearance
Show View
Perspective
Navigation
Preferences
ThreadX
FreeRTOS
SWV
Breakpoints Alt+Shift+Q, B
Build Analyzer
Console Alt+Shift+Q, C
Debug
Debugger Console
Debug Sources
Disassembly
Error Log Alt+Shift+Q, L
Executables
Expressions
Fault Analyzer
Live Expressions
Memory
Memory Browser
Modules
Outline Alt+Shift+Q, O
Problems Alt+Shift+Q, X
Progress
Project Explorer
Registers
SFRs
Signals
Static Stack Analyzer
Templates
Trace Control
SWV Trace log
SWV Exception Trace log
SWV Data Trace
SWV Data Trace Timeline Graph
SWV ITM Data Console
SWV Statistical Profiling
basic Debug [STM32 Cortex-M
basic.elf [cores: 0]
Thread #1 [main] 1 [core
main() at main.c:28 0x
arm-none-eabi-gdb (10.2.90
ST-LINK (ST-LINK GDB serve
startup_stm32f407vgtx.s
*/
#include
#include
#if !defined(__SOFT_FP_
#warning "FPU is not
#endif
int main(void)
{
printf("Hello STM32
printf("Hello DESD!
printf("God Bless Y
}
Name Type Value
Console Problems Executables Debug
basic Debug [STM32 Cortex-M C/C++ Application]
Download verified successfu
ENG US
13:03
18-05-2022

day11 - basic/Src/main.c - STM32CubeIDE

File Edit Source Refactor Navigate Search Project Run Window Help

Deb... Proj...

basic Debug [STM32 Cortex-M
basic.elf [cores: 0]
Thread #1 [main] 1 [core
main() at main.c:28 0x
arm-none-eabi-gdb (10.2.90
ST-LINK (ST-LINK GDB serve

startup_stm32f407vgtx.s main.c

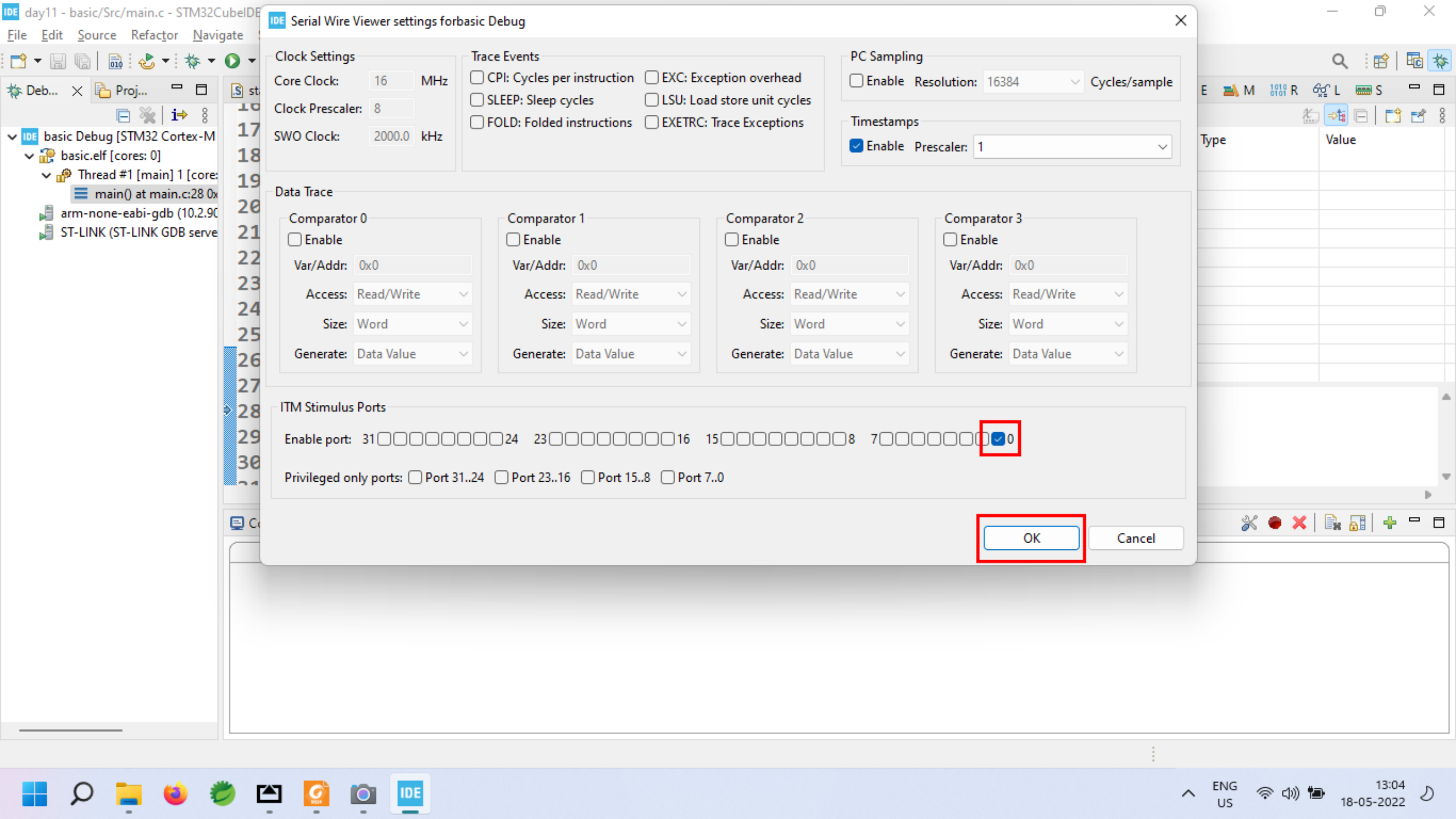
```
17  */
18
19 #include <stdint.h>
20 #include <stdio.h>
21
22 #if !defined(__SOFT_FP__) && defined(__ARM_FP)
23   #warning "FPU is not initialized, but the project is comp
24 #endif
25
26 int main(void)
27 {
28     printf("Hello STM32!\n");
29     printf("Hello DESD!\n");
30     printf("God Bless You!\n");
```

(x)= V B E M R L S

Name	Type	Value

Console Problems Executables Debugger Console Memory SWV ITM Data Console

ENG US 13:03 18-05-2022


day11 - basic/Src/main.c - STM32CubeIDE
File Edit Source Refactor Navigate
Serial Wire Viewer settings forbasic Debug
Clock Settings
Core Clock: 16 MHz
Clock Prescaler: 8
SWO Clock: 2000.0 kHz
Trace Events
CPI: Cycles per instruction
EXC: Exception overhead
SLEEP: Sleep cycles
LSU: Load store unit cycles
FOLD: Folded instructions
EXETRC: Trace Exceptions
PC Sampling
Enable Resolution: 16384 Cycles/sample
Timestamps
Enable Prescaler: 1
Data Trace
Comparator 0
Comparator 1
Comparator 2
Comparator 3
Enable
Var/Addr: 0x0
Access: Read/Write
Size: Word
Generate: Data Value
ITM Stimulus Ports
Enable port: 31 24 23 16 15 8 7 0
Privileged only ports: Port 31..24 Port 23..16 Port 15..8 Port 7..0
OK
Cancel
basic Debug [STM32 Cortex-M
basic.elf [cores: 0]
Thread #1 [main] 1 [core
main() at main.c:28 0x
arm-none-eabi-gdb (10.2.90
ST-LINK (ST-LINK GDB serve
Type
Value
ENG
US
13:04
18-05-2022

day11 - basic/Src/main.c - STM32CubeIDE

File Edit Source Refactor Navigate Search Project Run Window Help

Deb... Proj...

basic Debug [STM32 Cortex-M
basic.elf [cores: 0]
Thread #1 [main] 1 [core
main() at main.c:28 0x
arm-none-eabi-gdb (10.2.90
ST-LINK (ST-LINK GDB serve

startup_stm32f407vgtx.s main.c

```
17  */
18
19 #include <stdint.h>
20 #include <stdio.h>
21
22 #if !defined(__SOFT_FP__) && defined(__ARM_FP)
23   #warning "FPU is not initialized, but the project is comp
24 #endif
25
26 int main(void)
27 {
28     printf("Hello STM32!\n");
29     printf("Hello DESD!\n");
30     printf("God Bless You!\n");
```

(x)= V B E M R L S

Name	Type	Value

Console Problems Executables Debugger Console Memory SWV ITM Data Console

Port 0

Start Trace...

ENG US 13:04 18-05-2022

day11 - basic/Src/main.c - STM32CubeIDE

File Edit Source Refactor Navigate Search Project Run Window Help

Deb... Proj...

basic Debug [STM32 Cortex-M
basic.elf [cores: 0]
Thread #1 [main] 1 [core
main() at main.c:31 0x
arm-none-eabi-gdb (10.2.90
ST-LINK (ST-LINK GDB serve

startup_stm32f407vgtx.s main.c

```
20 #include <stdio.h>
21
22 #if !defined(__SOFT_FP__) && defined(__ARM_FP)
23   #warning "FPU is not initialized, but the project is comp
24 #endif
25
26 int main(void)
27 {
28     printf("Hello STM32!\n");
29     printf("Hello DESD!\n");
30     printf("God Bless You!\n");
31 }
32
33
```

(x)= V B E M R L S

Name	Type	Value

Console Problems Executables Debugger Console Memory SWV ITM Data Console

Port 0

```
Hello STM32!
Hello DESD!
God Bless You!
```

Writable Smart Insert 31 : 1 : 969

ENG US 13:05 18-05-2022

Thank you!

Nilesh Ghule <nilesh@sunbeaminfo.com>