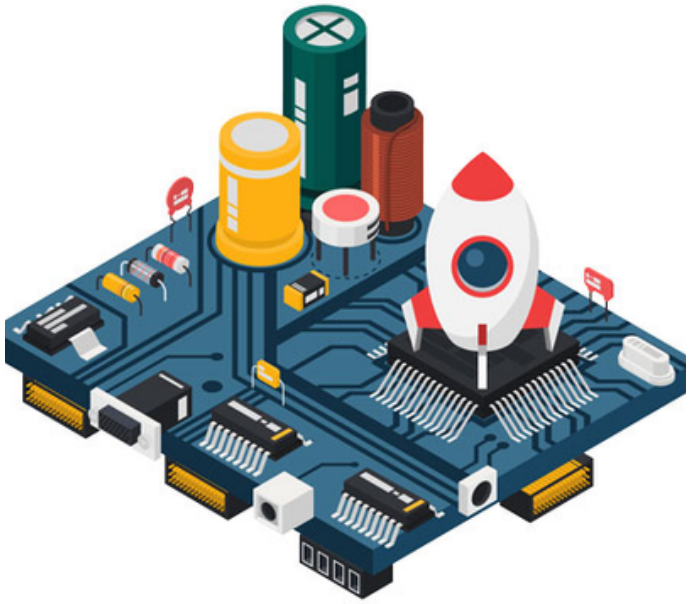
REPORT

LAB3



PREPARED BY

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LAB_3

Debug the last program using gdb

5.2v

-Physical Board : VersatilePB

-Processor : Arm926ej-s

Run the Board :

```
MINGW64:/f/Embedded Systems/Github/Master-Embedded-Systems/Unit_3_Embedded_C/Lec_3/Lab_3

mohammed kadry@victus MINGW64 /f/Embedded Systems/Github/Master-Embedded-Systems
/Unit_3_Embedded_C/Lec_3/Lab_3 (main)
$ c:/qemu/qemu-system-arm -M versatilepb -m 128M -nographic -s -S -kernel Mohamed_Kadry.elf
```

Open the GNU Debugger(gdb) :

```
mohammed kadry@victus MINGW64 /f/Embedded Systems/Github/Master-Embedded-Systems
/Unit_3_Embedded_C/Lec_3/Lab_3 (main)
$ arm-none-eabi-gdb.exe Mohamed_Kadry.elf
GNU gdb (GDB) 7.5.1
Copyright (C) 2012 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.  Type "show copying"
and "show warranty" for details.
This GDB was configured as "--host=i686-pc-mingw32 --target=arm-none-eabi".
For bug reporting instructions, please see:
<http://www.gnu.org/software/gdb/bugs/>...
Reading symbols from F:\Embedded Systems\Github\Master-Embedded-Systems\Unit_3_E
mbedded_C\Lec_3\Lab_3\Mohamed_Kadry.elf...done.
(gdb) target remote localhost:1234
Remote debugging using localhost:1234
reset () at startup.s:4
4       ldr sp , =stack_top
(gdb) warning: Source file is more recent than executable.
```

Breakpoints :

```
(gdb) target remote localhost:1234
Remote debugging using localhost:1234
reset () at startup.s:4
4       ldr sp, =stack_top
(gdb) b main
Breakpoint 1 at 0x10018: file app.c, line 7.
(gdb) b Uart_Send_String
Breakpoint 2 at 0x10038: file uart.c, line 9.
```

continue to get to Breakpoint :

used to stop
the program run in the middle

```
(gdb) c
Continuing.

Breakpoint 1, main () at app.c:7
7         Uart_Send_String(string_buffer); //send first element of array
(gdb) c
Continuing.

Breakpoint 2, Uart_Send_String (
    P_tx_string=0x10078 <string_buffer> "Learn-in-Depth:<Mohamed Kadry>"
)
    at uart.c:9
9           while(*P_tx_string!='\0')
(gdb)
```

watchpoints act on variables :

used to pause
the program whenever a watched
variable's value is modified.

```
(gdb) watch string_buffer
Hardware watchpoint 3: string_buffer
(gdb)
```

Print Commands :

The print command prints the value of the variable specified, and print/x prints the value in hexadecimal:

```
(gdb) watch string_buffer
Hardware watchpoint 3: string_buffer
(gdb)
```

Stepping :

```
(gdb) s
11              UART0DR=(unsigned int)(*P_tx_string);
(gdb)
```

```
(gdb) si
0x00010040      11              UART0DR=(unsigned int)(*P_tx_string);
(gdb) si
0x00010044      11              UART0DR=(unsigned int)(*P_tx_string);
(gdb) si
0x00010048      11              UART0DR=(unsigned int)(*P_tx_string);
(gdb) si
12              P_tx_string++; /*New Char*/
(gdb)
```

```
mohammed kadry@victus MINGW64 /f/Embedded Systems/Github/Master-Embedded
/Unit_3_Embedded_C/Lec_3/Lab_3 (main)
<8M -nographic -s -S -kernel Mohamed_Kadry.elf
L
```

Where == backtrace commands :

produces a stack trace of the function calls that lead to a segfault

```
(gdb) where
#0  Uart_Send_String (
    P_tx_string=0x10078 <string_buffer> "Learn-in-Depth:<Mohamed Kadry>")
    at uart.c:12
#1  0x00010020 in main () at app.c:7
(gdb) backtrace
#0  Uart_Send_String (
    P_tx_string=0x10078 <string_buffer> "Learn-in-Depth:<Mohamed Kadry>")
    at uart.c:12
#1  0x00010020 in main () at app.c:7
(gdb)
```

info breakpoints command :

shows

information about all declared breakpoints

```
(gdb) info breakpoints
Num     Type           Disp Enb Address    What
1       breakpoint     keep y   0x00010018 in main at app.c:7
        breakpoint already hit 1 time
2       breakpoint     keep y   0x00010038 in Uart_Send_String at uart.c:9
        breakpoint already hit 1 time
3       hw watchpoint  keep y              string_buffer
(gdb)
```

Finish command :

runs until the current function is finished delete - deletes a specified breakpoint

```
(gdb) finish
Run till exit from #0  Uart_Send_String (
    P_tx_string=0x10078 <string_buffer> "Learn-in-Depth:<Mohamed Kadry>")
    at uart.c:12
main () at app.c:8
8       }
```

Debug the program using eclipse