Devices and Device Interfacing - Assignment

1. Hello World

1. Write a program to print "Hello World".
2. Compile the program using the cross-compiler `arm-none-linux-gnueabi-gcc`

```
$ arm-none-linux-gnueabi-gcc hello.c -o hello
```

3. Transfer the executable to the board using `scp`.
4. Execute the program on the board.

2. Accessing Devices

Write a user space program to reset the processor, by writing to the reset controller.

AT91SAM9260. The AT91SAM9260 is a SoC, System-on-Chip. And as such it has a CPU and peripheral devices on a single chip. The devices include PIC, UART, Timers, Ethernet, etc.

Reset Controller. The AT91SAM9260 processor has a Reset Controller (RSTC). The reset controller has registers through which the processor and the peripherals can be reset.

The base address of the reset controller, and the register details can be obtained datasheet. The base address and the complete memory map is provided in page 21 of the datasheet. The register details is available in page 98 of the datasheet.

Writing appropriate values to the control register bits, will cause the processor to reset.

Page Table Mapping. The page table mapping for a given physical address, can be created using the helper function `mmio_map()`. The function accepts the physical address and size as arguments and returns the virutal address on success.

```
#include <mmio.h>

vaddr = mmio_map(paddr, size)
off_t paddr
size_t size
void * vaddr;
```

`mmio_map()` is defined in `libmmio`. Compile your program with `-lmmio` option to link with `libmmio`.