Functions Program

COSC-230
Assignment

Stephen Marz

Topics

- Assignment
- Requirements
- Testing
- Plagiarism
- Submission

Task

- You will be writing one assembly function.
- The function returns a random number between a minimum and maximum value.
- The **random number** in [min .. max] is returned.

Prototype

```
int64_t get_rand (int64_t min_val,
                  int64_t max_val);
```

Name: `get_rand`

Returns: `int64_t`

Parameters:

- `int64_t min_val` – the lower bound of the random number.
- `int64_t max_val` – the upper bound of the random number.

C++ Version

```
int64_t get_rand (int64_t min_val,
                  int64_t max_val)
{
   return min_val + rand() % (max_val - min_val + 1);
}
```

Requirements

- You must properly use the stack so that you can call the rand function.

- Use the ABI names for registers
  - ABI names: t0, a0, s0, etc.
  - Index names: x10, x15, x20, etc.

Testing

- The .cpp template file executes your random number function.

- It takes three parameters:
  - number of random numbers
  - minimum value
  - maximum value

- Compile with the following command.

```
~> riscv64-unknown-linux-gnu-g++ -o lab lab.cpp lab.S
~> ./lab
```

Example #1

```
~> ./lab 10 -1 1
-1
0
1
1
-1
-1
-1
-1
0
-1
```

Example #2

```
~> ./lab 10 5 10000
1173
541
7369
9169
8894
8574
7418
2464
1857
3911
```

Example #3

```
~> ./lab 5 -100 -100
-100
-100
-100
-100
-100
```

Example #4

```
~> ./lab 7 -10 0
-10
-5
-2
-7
-1
0
-9
```

Plagiarism Policy

- This is an **individual assignment**.
- You must NOT be able to see anyone else's code.
- Do NOT send your code and do not accept someone sending you code.
- Do NOT use any online source, such as Chegg, Stackoverflow, etc.
- You MAY use the online notes that I have created for you.
- You MUST cite anyone with whom you worked with, including classmates, students in another class, professors, and TAs.
  - Please note that even if you cite another student, professor, or TA, it does NOT mean you may share code.
- If you cannot attest to the truthfulness of not cheating using the bullets above. DO NOT submit your code. It is better just to get a 0 here and let it be done. If you proceed with copied code, the office of Student Conduct and Community Standards (SCCS) will become involved.

Submission

- Make sure your code compiles and assembles with the following command.

```
~> riscv64-unknown-linux-gnu-g++ -o lab lab.cpp lab.S
~> ./lab
```

- Replace **lab** with the name of your lab.
  - Make sure you have comments in your code, including a header and inline comments.
  - Submit only your .S file.

Topics

- Assignment
- Requirements
- Testing
- Plagiarism
- Submission

Functions Program

Stephen Marz

COSC-230

Assignment

THE UNIVERSITY OF
TENNESSEE
KNOXVILLE