INTRODUCTION TO COMPUTERS II
LAB 3: PROGRAMMING WITH SUBROUTINES

1. Develop a RISC-V assembly program to multiply two integer numbers. The RISC-V **`mul`** instruction cannot be used (use the **pr3** project in the Workspace):

```
int mul(int a, int b) {
    int res = 0;
    while (b > 0) {
        res += a;
        b--;
    }
    return res;
}
```

2. Develop a RISC-V assembly program to calculate the dot product of two vectors (use the **pr3** project in the Workspace):

```
int dotprod(int V[], int W[], int n) {
    int acc = 0;
    for (int i = 0; i < n; i++) {
        acc += mul(V[i], W[i]);
    }
    return acc;
}
```

3. Develop a RISC-V assembly program, which uses the two previous functions, to determine which of two vectors has a greater norm (length) (use the **pr3** project in the Workspace):

```
#define N 4
int A[] = {3,5,1,9}
int B[] = {1,6,2,3}
int res;

void main() {
    int normA = dotprod(A, A, N);
    int normB = dotprod(B, B, N);
    if (normA > normB)
        res = 0xa;
    else
        res = 0xb;
}
```