**COMP 3315 Lab6: Recursion**

**Number and Name:**

1. **Object**: MIPS Recursion
2. **Procedure**:

-**Iterative Double Factorial (n!!)**:

Write and run a MIPS Procedure that takes 1 integer input and finds double factorial of the given integer. Use procedure that takes 1 integer and returns double factorial’s value with an iterative loop.

-**Recursive Double Factorial (n!!)**:

Write and run a MIPS Procedure that takes 1 integer input and finds double factorial of the given integer. Use a recursive procedure that takes 1 integer and returns double factorial’s value. You need to call functions recursively and store call address and sum value in stack in order the implement recursion.

-**Main:**

Call your function with an integer, send it to procedure and print the return value.

You are expected to implement the MIPS code. Use necessary code and register conventions. Use Stack for return addresses in recursive code. Upload 2 .asm file for iterative and recursive functions and C or Pseudo Code to a word or document file(.pdf, .word etc).

int main() {

int result = 1;

int n = 5;

// Call doubleFactorial

int doubleFactResult = doubleFactorial(n);

return 0;

}

int doubleFactorial(int n) {

if (n <= 0) {

return 1;

} else {

int recursiveResult = doubleFactorial(n - 2);

return n \* recursiveResult;

}

}

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int doubleFactorial(int n) {

int result = 1;

while (n > 0) {

result \*= n;

n -= 2;

}

return result;

}

int main() {

int result;

int n = 8;

result = doubleFactorial(n);

printf("%d\n", result);

return 0;

}