國立清華大學資訊工程學系

計算機結構

2015 spring Homework 3

- Those two exercises are to practice procedure call and recursive call.

Q1：Write a MIPS assembly program for the following C program.

```
#include "stdio.h"
int square(int x);
int add(int x, int y);
int power(int x, int y);
int main() {
        int a = 0;
        int b = 0;
        int c = 0;
        int d = 0;
        printf("input a: ");
        scanf("%d", &a);
        printf("input b: ");
        scanf("%d", &b);
        printf("input c: ");
        scanf("%d", &c);
        d = add(square(b) , power(a,c)) ;
        printf("result = %d",d);
        return 0;
}
int square(int x){
        return x*x;    // x^2
}
int add(int x, int y){
        return x+y;
}
int power(int x, int y){
        return x^y;
}
```

P.S. a, b, c, d are stored in $s0, $s1, $s2, $s3 respectively.

Q2：Write a MIPS assembly program for the following C program.

```
#include "stdio.h"
int recur(int n);
int main(){
		int n = 0;
		printf("input n: ");
		scanf("%d", &n);
		printf("fibird: %d\n", recur (n) );
		return 0;
}
int recur (int n){
		if(n <= 0)
			return 0;
		else if (n == 1)
			return 1;
		else
			return 2*recur (n-1) + n;
}
```

P.S. n are stored in $s0, respectively.

- **Submission** (2 assembly programs)

Please name your assembly program with your student ID, for example:
“hw3_p1_100000001.asm” & “hw3_p2_100000001.asm”.
Use the iLMS (http://lms.nthu.edu.tw/) to submit your program.

- **Grading Criteria**

Correctness: 80%
Comment in program: 10%
Output format: 10%