CS3021/3421 Tutorial 1

Consider the following C/C++ code segment.

```
int g = 256;

int p(int i, int j) {
    int k;
    k= i + j;
    return (k << 2) - 1;
}

int q(int i) {
    return p(g, -i);
}

int f(int n) {
    if (n > 0) {
        return n*f(n-1);
    } else {
        return 1;
    }
}
```

Q1.   Translate the code segments above into IA32 assembly language using the basic code generation strategy outlined in lectures.

Q2.   What does the function f(n) calculate? Draw the state of the stack frames after a call to f(10) has been made during the calculation of f(13).

Q3.   Using Visual Studio (or equivalent), create a Win32 application with files t1.h and t1.asm containing the IA32 assembly language for p(…), q(…) and f(…). Write C++ code to test p(…), q(…) and f(…) by, for example, calling f(…) to calculate f(1), f(2) to f(10) [see IA32codegen.cpp]. Hand in listings of your code files and a screen dump of the console window showing the results of your program.