Different Types of Recursion

Prerequisite: Recursion

Find more contents at
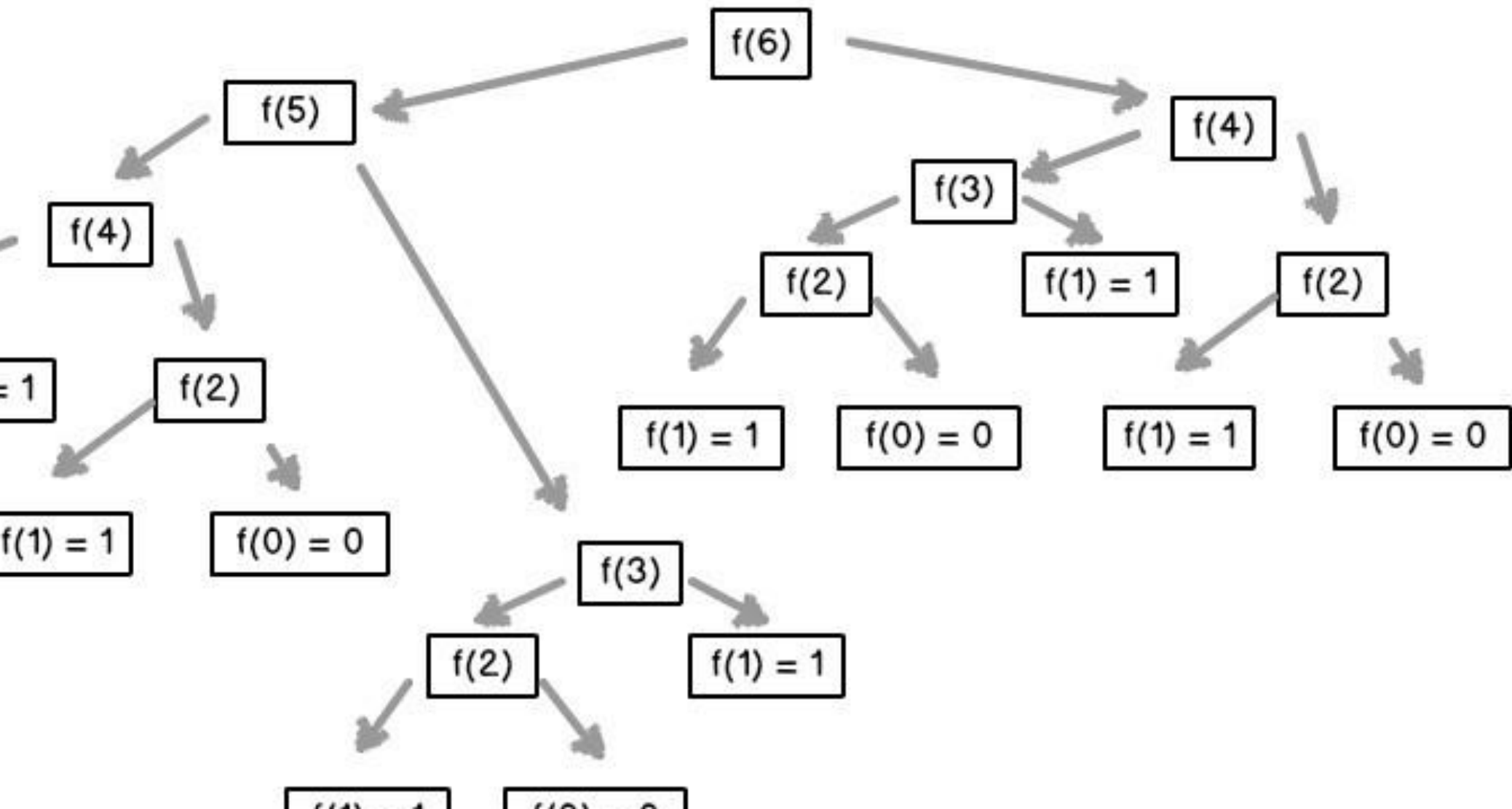https://sites.google.com/view/cse105june18/home

Md. Saidul Hoque Anik
onix.hoque.mist@gmail.com

Linear Recursion

```
int getSum(int n)
{
   if (n == 1)
      return 1;
   else
   {
      return n + getSum(n-1);
   }
}
```
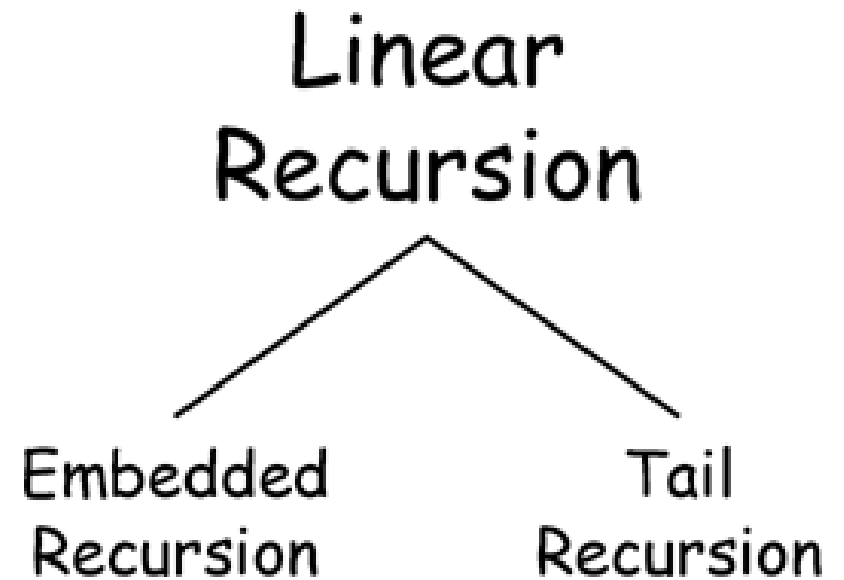
Multiple Recursion

nth Fibonacci Number (Binary Recursion)

Tail Recursion

It can be optimized into an iterative version.

```cpp
void print(int n)
{
    if (n < 0)
        return;
    else
    {
    cout << " " << n;
    print(n-1);
    }
}
```

Linear
Recursion

Embedded
Recursion

Tail
Recursion

Nested Recursion

```
int ackerman(int m, int n)
{
if (m == 0) return(n+1);
else if (n == 0) return(ackerman(m-1,1));
else return(ackerman(m-1,ackerman(m,n-1)));
}
```

Mutual Recursion

Recursive functions that work in pairs

Write a recursive function that detects if a number is even or odd

Mutual Recursion

Recursive functions that work in pairs

```
int is_even(unsigned int n)
{
if (n==0) return 1;
else return(is_odd(n-1));
}

int is_odd(unsigned int n)
{
return (!iseven(n));
}
```