Algorithmische Graphentheorie
SS 09

The Color_shift-Procedure (Edge Coloring)

Procedure: ColorShift(k,f)

Input: A sequence of nodes $(y_1, y_2, \ldots, y_k)$, a sequence of colors $(b_1, b_2, \ldots, b_k)$ with $b_j \in F_{y_j}$, $j = 1, 2, \ldots k$, and a color $f \in F_x \cap F_{y_k}$;
$c(\{x, y_k\}) := f$;
for $j := k - 1$ downto 1 **do**
    $c(\{x, y_j\}) := b_j$;
end for

Construct the sequences $(y_1, y_2, \ldots, y_k)$ (nodes) and $(b_1, b_2, \ldots, b_k)$ (colors) with $b_j \in F_{y_j}$, $j = 1, 2, \ldots k$

Procedure: Construct_Sequences(x,y)

Input: uncolored edge $\{x, y\}$;
$k := 0$, $y_1 := y$;
repeat
    $\{ \; y_1, y_2, \ldots, y_k$ are pairwise different. $\}$
    $k := k + 1$;
    Choose $b_k \in F_{y_k}$;
    if $b_k \in F_x$ **then**
        $Color\_shift(k, b_k)$; $b_k \notin \{b_1, b_2, \ldots, b_{k-1}\}$.
        Exit;
    else
        $\{ \; b_k$ is not missing in x.$\}$
        Let $y_{k+1} \in \Gamma(x)$ such that $c[\{x, y_{k+1}\}] = b_k$;
    end if
until $y_{k+1} \in \{y_1, y_2, \ldots, y_k\}$