Algorithm 2: Connection event incorporation

Input: Should-be-included and executable events of the base test case E_{exe}, should-be-included but not executable events of the base test case E_{unexe}, target app app_t, time limit max_time, repeat number $repeat\_num$

Output: New test case T_{new}

$T_{tmp} \leftarrow []$, $T_{new} \leftarrow []$;
$T_{tmp}.Append(E_{exe})$;
$T_{new}.Append(E_{exe})$;
$successNum \leftarrow 0$;
for $i \leftarrow 0$ *to* $repeat\_num$ **do**
    reset_the_time_duration_to_zero();
    $driver \leftarrow Launch(app_t)$;
    $driver.ExecuteEvents(E_{exe})$;
    $successNum_{tmp} \leftarrow 0$;
    for ***each*** e_i *in* E_{unexe} **do**
        $executeSuccess \leftarrow False$;
        $E_{pre} \leftarrow []$;
        while $executeSuccess = False$ *and the time duration does not exceed* max_time **do**
            $E \leftarrow GenerateEvents(driver.GetWidgets())$;
            for ***each*** e_s *in* E **do**
                $driver.Execute(e_s)$;
                $executeSuccess \leftarrow driver.Execute(e_i)$;
                if $executeSuccess = True$ **then**
                    $T_{tmp}.Append([E_{pre}, e_s, e_i])$;
                    $successNum_{tmp} \leftarrow successNum_{tmp} + 1$;
                    break;
                end
                $driver.BacktrackToLastState()$;
            end
            if $executeSuccess = False$ **then**
                $e_{rand} \leftarrow Random(E)$;
                $E_{pre}.Append(e_{rand})$;
                $driver.Execute(e_{rand})$;
            end
        end
    end
    if $successNum_{tmp} = successNum$ *and* $Len(T_{tmp}) < Len(T_{new})$ **then**
        $T_{new} \leftarrow T_{tmp}$;
    end
    if $successNum_{tmp} > successNum$ **then**
        $T_{new} \leftarrow T_{tmp}$;
        $successNum \leftarrow successNum_{tmp}$;
    end
end
return T_{new};