?
Po-
si-
tional
Burrows–
Wheeler
Trans-
form
trasfor-
mata
di
Burrows–
Wheeler
po-
sizionale
aplotipo
??
?
genotipo
X
M
x_i
$i =$
$0, \ldots, M-$
1
N
$k =$
$0, \ldots, N-$
1
X
$\Sigma =$
$\{0, 1\}$
$0 \prec$
1
$x_i[k] = \{0, 1\}$

(1)

$x_i[k_1, k_2)$
x_i
k_1
k_2-
1
$x_i \in$
X
x_i
x_j
k_1
k_2-
1
$x_i[k_1, k_2) = x_j[k_1, k_2)$

(2)

x_i
x_j
$(k_1 = 0 \vee x_i[k_1-1] \neq x_j[k_1-1]) \wedge (k_2 = N \vee x_i[k_2] \neq x_j[k_2])$

(3)

z
X
$\tilde{x}_i \in$
X
k_1
k_2-
1
$\tilde{x}_j$
$[k_1, k_2)$
$\tilde{k}_1$
k_2-
1
X
k
$k-$
1
k
k
k
$k+$
1
X
k
pre-
fix
ar-
ray
a_k
$\{0, \ldots, M-$
$1\}$
$a_k[i] =$
j
x_j
i
X
k
X
$y_i^k[j] = x_{a_k[i]}[j]$

(4)

y_i^k
i
k
j
j
a_{k+1}

$i <$
j
$\max_{i<m\leq j} d_k[m]$
(8)
l_k
k
$l_k[i] = k - d_k[i]$
(9)
$X =$
$\{x_0, x_1, \ldots, x_{M-1}\}$
M
N
X
$N+$
1
(a_k, d_k)
$0 \leq$
$k \leq$
$N-$
a_{k+1}
d_{k+1}
a_k
d_k
??
$\dot{\mathcal{O}}(NM)$
(10)
k
M
a_k
d_k
$u \leftarrow$
0
$v \leftarrow$
0
$p \leftarrow$
$k+$
1
$q \leftarrow$
$k+$
1
$a \leftarrow$
[]
$b \leftarrow$
[]
$d \leftarrow$
[]
$e \leftarrow$
[]
$ev-$
ery
$i \in$
$[0, M-$
1]
$d_k[i] >$
p
$p \leftarrow$
$d_k[i]$
$d_k[i] >$
q
$q \leftarrow$
$d_k[i]$
$y_i^k[k] =$
0
$a[u] \leftarrow$
$a_k[i]$
$d[u] \leftarrow$
p
$u \leftarrow$
$u+$
1
$p \leftarrow$
0
$b[v] \leftarrow$
$a_k[i]$
$e[v] \leftarrow$
q
$v \leftarrow$
$v+$
1
$q \leftarrow$
0
$a_{k+1} \leftarrow$
$concatenate(a, b)$
$d_{k+1} \leftarrow$
$concatenate(d, e)$
a_{k+1}
d_{k+1}
a_k
d_k
α_k
a_k
$\alpha_k[i] = j \iff a_k[j] = i$
$_T\ a_k$
$_T\ \alpha_k$
$_T d_k l_k$