More Detailed APFD Results for Prioritization of Abstract Test Cases by Weighting Covered Value Combinations

This document provides more detailed APFD results for the paper "Prioritization of Abstract Test Cases by Weighting Covered Value Combinations" submitted to Science China Information Sciences.

This document provides six figures of APFD comparisons under prioritization strength and a table of statistical analysis for pairwise APFD comparisons of all WICBP Techniques.
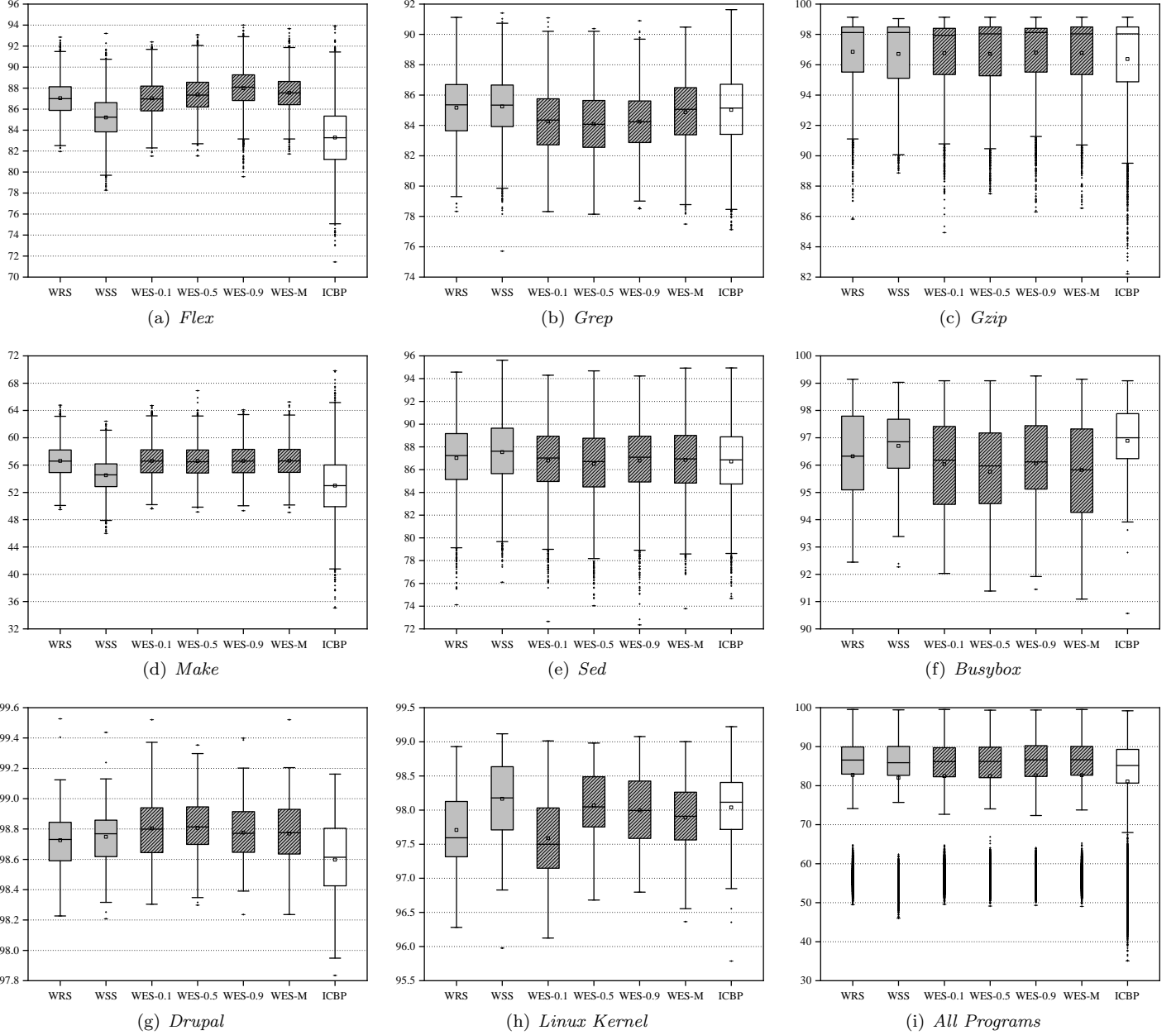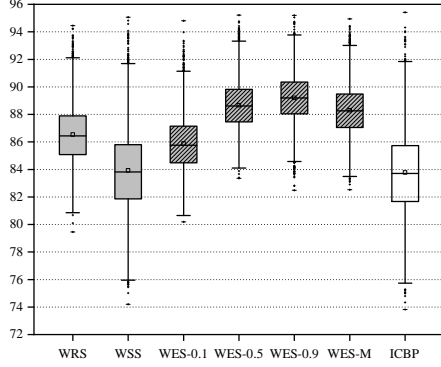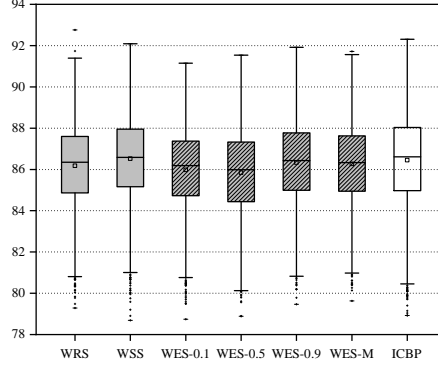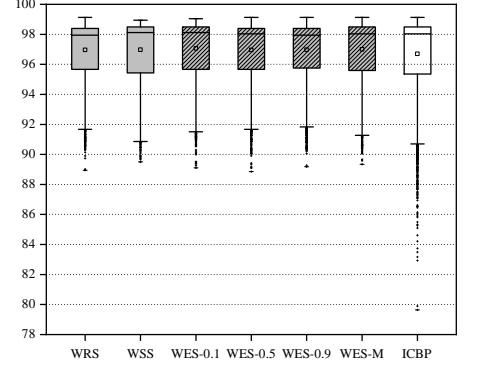

Figure 1: **APFD** comparisons under prioritization strength $\tau = 1$.

(a) *Flex*   (b) *Grep*   (c) *Gzip*

(d) *Make*   (e) *Sed*   (f) *Busybox*

(g) *Drupal*   (h) *Linux Kernel*   (i) *All Programs*

Figure 2: **APFD** comparisons under prioritization strength $\boldsymbol{\tau = 2}$.
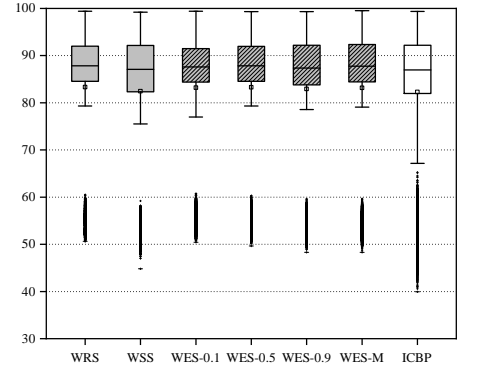
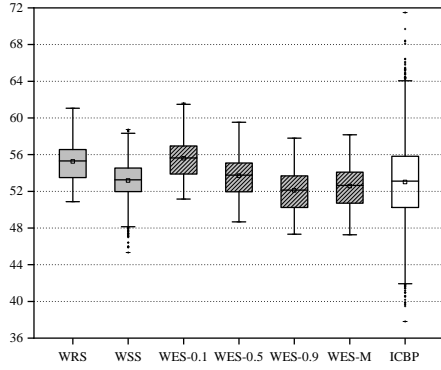Figure 3: **APFD** comparisons under prioritization strength $\tau = 3$.

(a) *Flex* (b) *Grep* (c) *Gzip*

(d) *Make* (e) *Sed* (f) *All Programs*

Figure 4: **APFD** comparisons under prioritization strength $\tau = 4$.
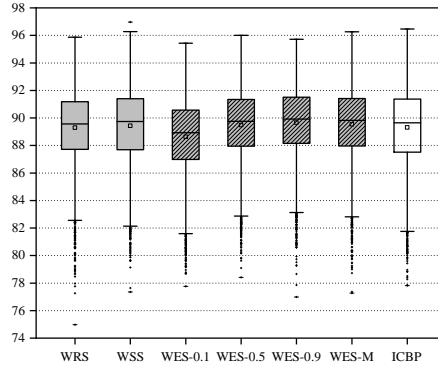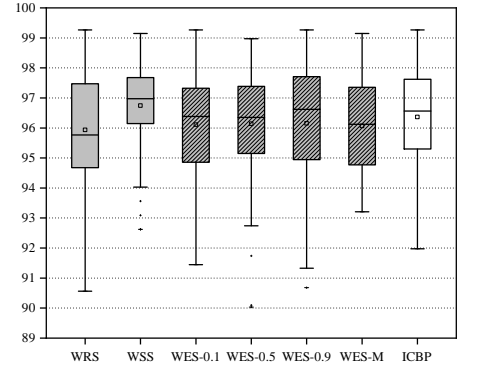

(a) *Flex* (b) *Grep* (c) *Gzip*

(d) *Make* (e) *Sed* (f) *All Programs*

Figure 5: **APFD** comparisons under prioritization strength $\tau = 5$.
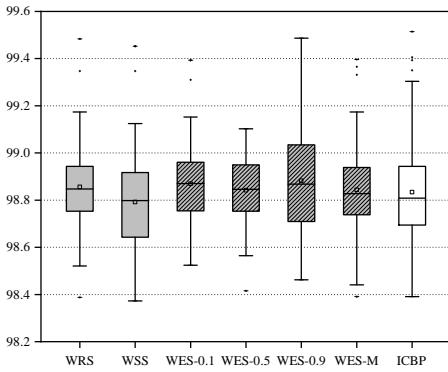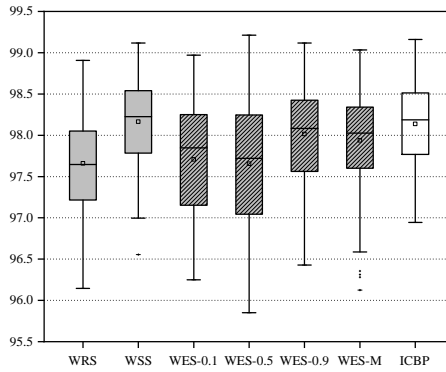
(a) *Flex* (b) *Grep* (c) *Gzip*

(d) *Make* (e) *Sed* (f) *All Programs*
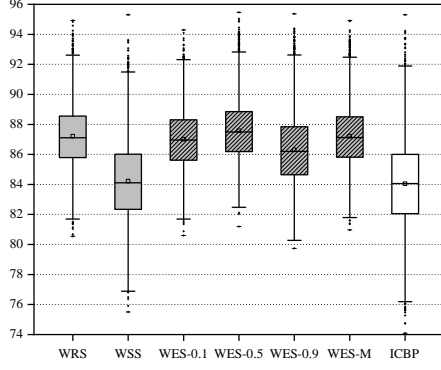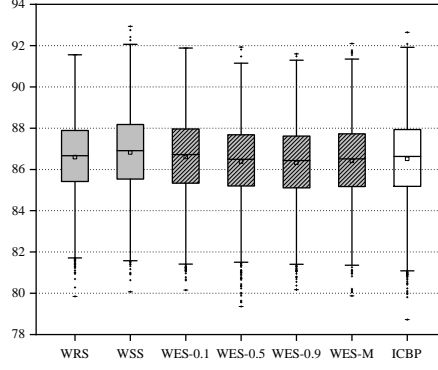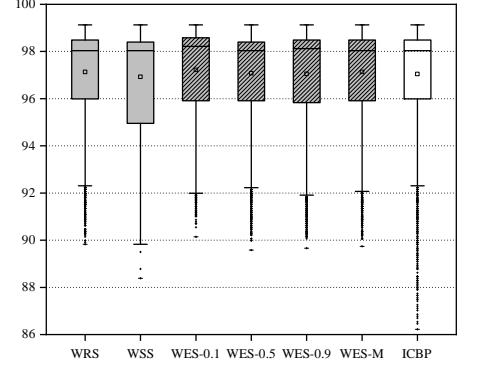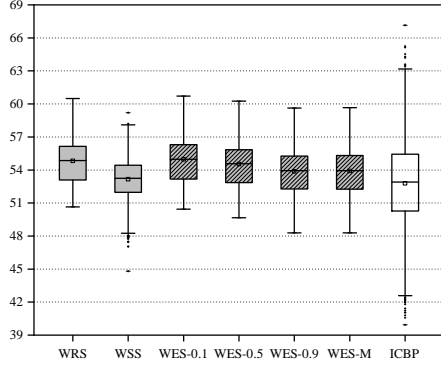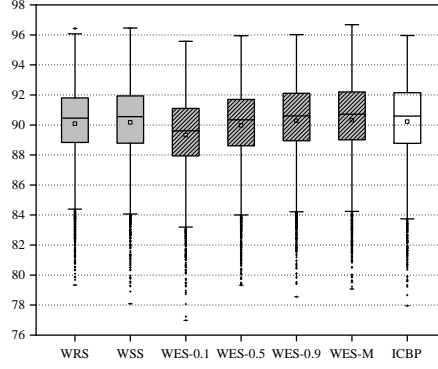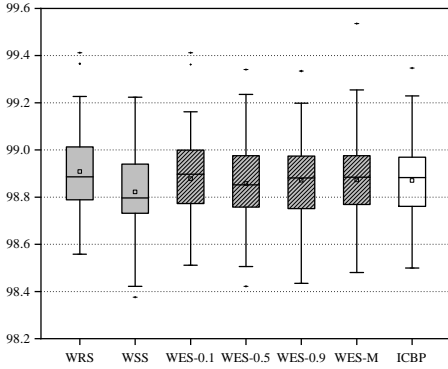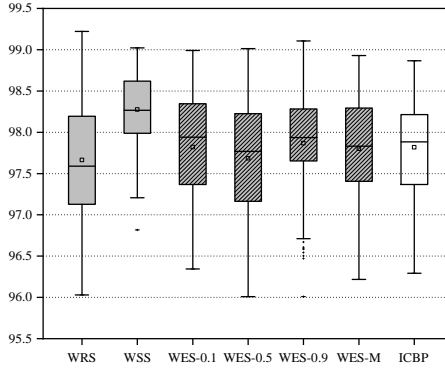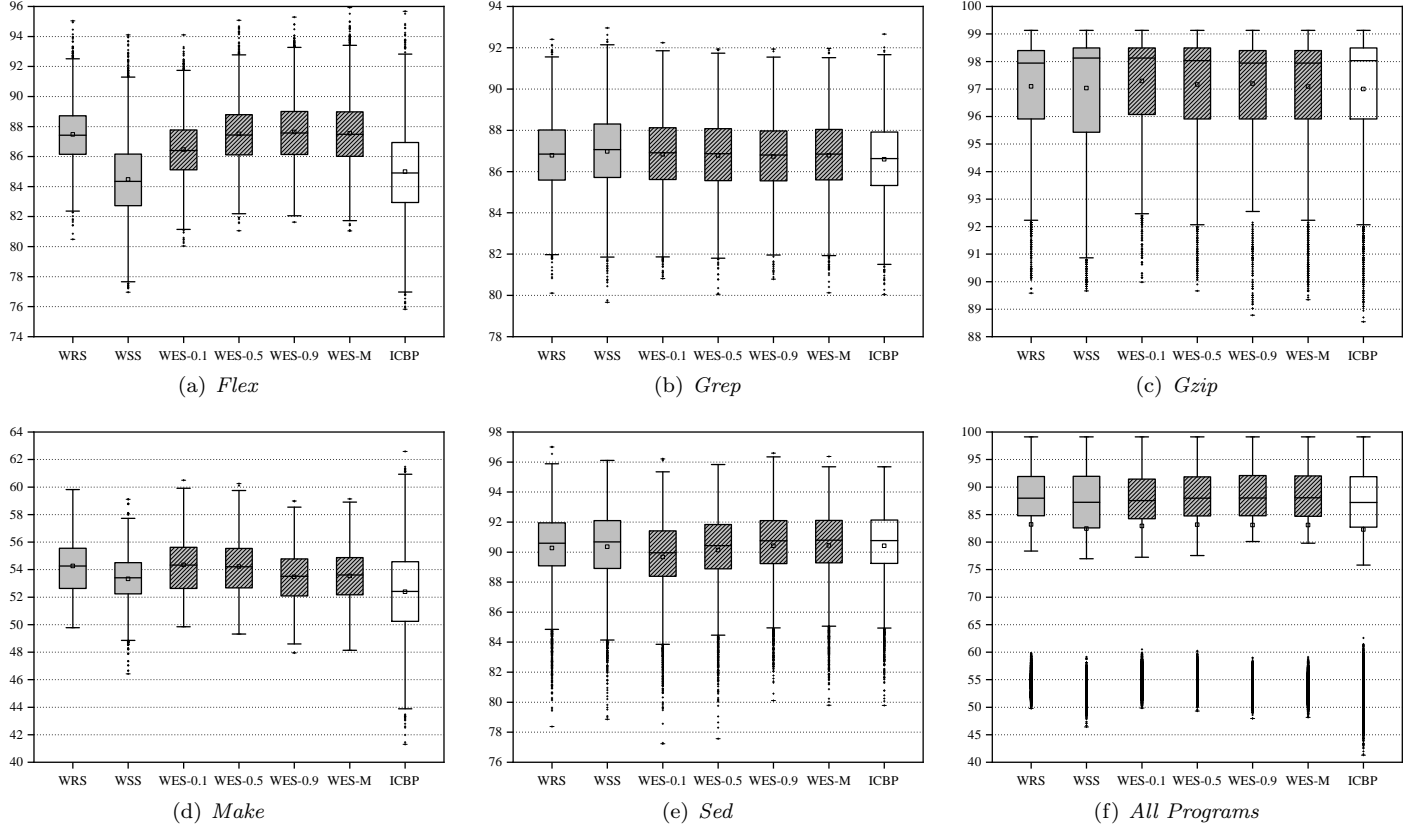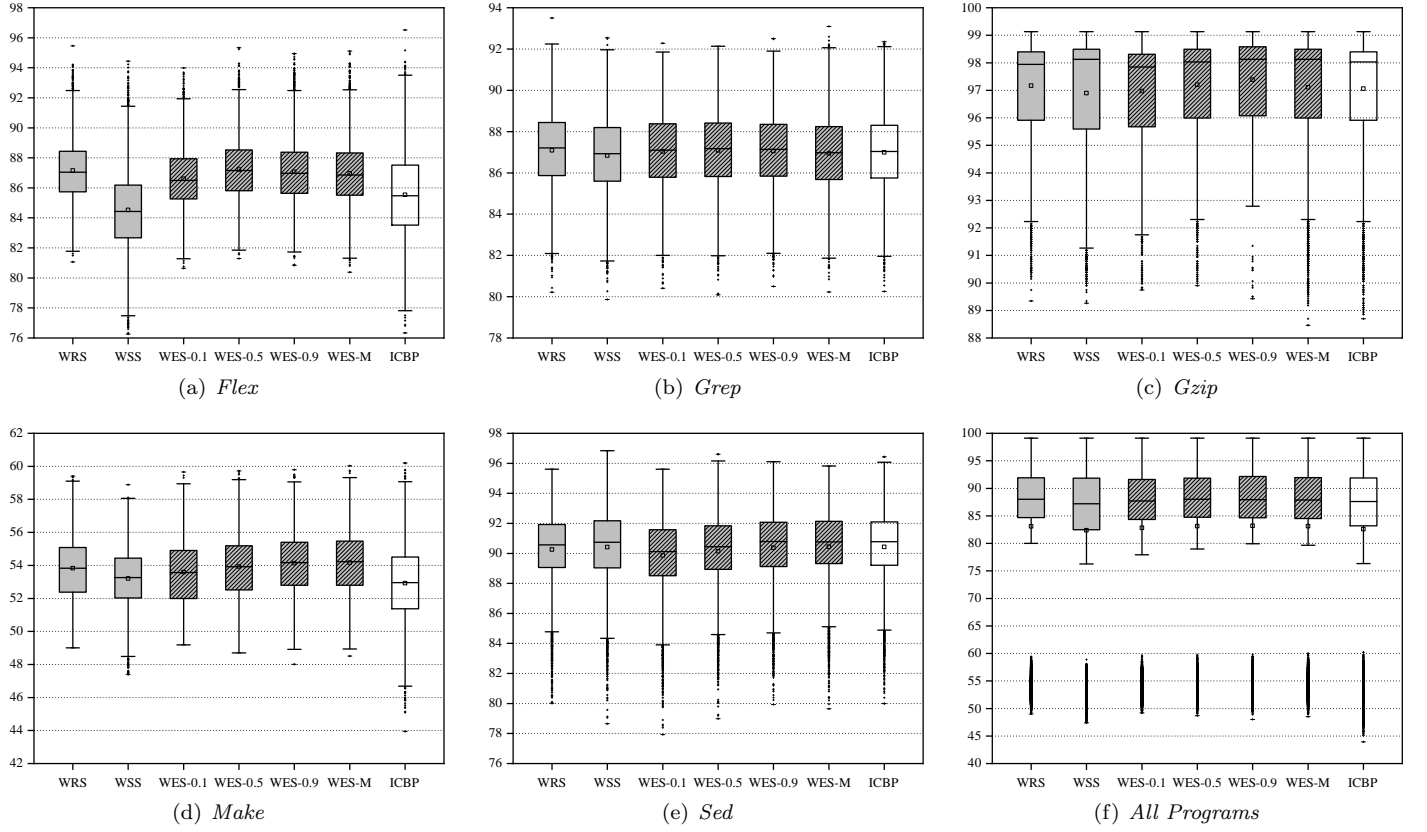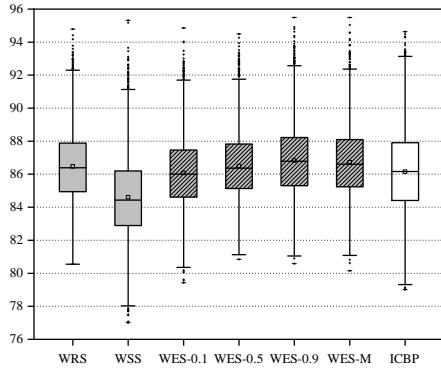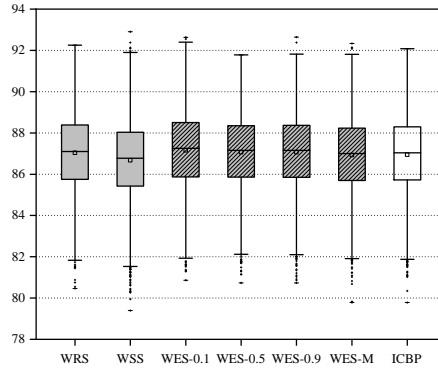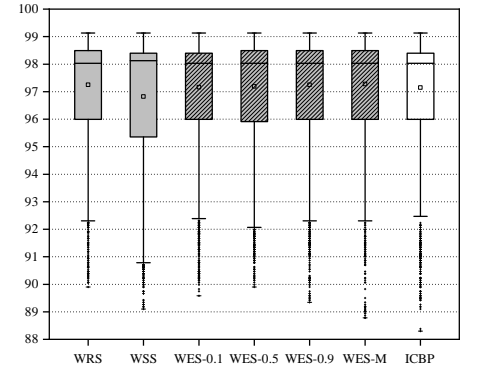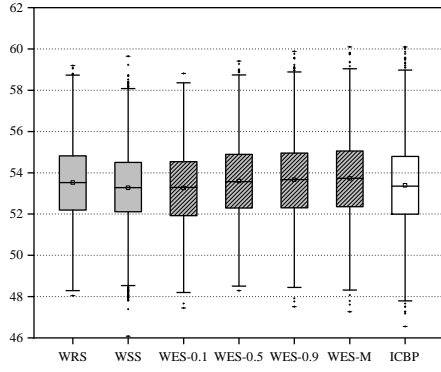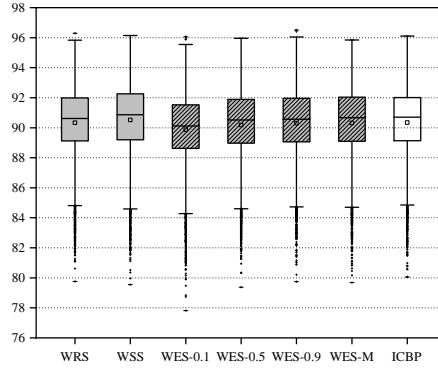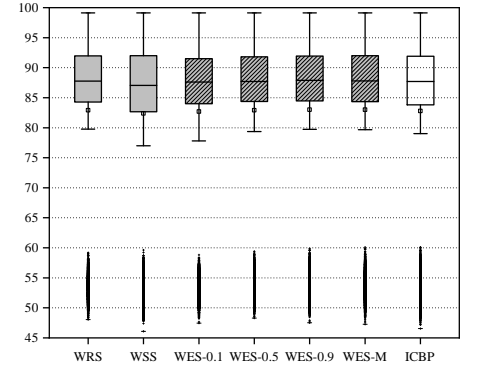
Figure 6: **APFD** comparisons under prioritization strength $\boldsymbol{\tau = 6}$.

Table 1: Statistical analysis for pairwise **APFD** comparisons of all WICBP Techniques

Strength (τ)	Comparison	Subject Program								
		Flex	Grep	Gzip	Make	Sed	Busybox	Drupal	Linux Kernel	All Programs
$\tau = 1$	WSS *vs.* WRS	✘ (0.24)	❍ (0.51)	✘ (0.48)	✘ (0.28)	✔ (0.54)	❍ (0.56)	❍ (0.54)	✔ (0.71)	✘ (0.47)
	WES-0.1 *vs.* WRS	❍ (0.50)	✘ (0.38)	✘ (0.48)	❍ (0.50)	✘ (0.48)	❍ (0.45)	✔ (0.61)	❍ (0.45)	✘ (0.48)
	WES-0.1 *vs.* WSS	✔ (0.75)	✘ (0.36)	❍ (0.50)	✔ (0.72)	✘ (0.43)	✘ (0.39)	❍ (0.57)	✘ (0.25)	✔ (0.51)
	WES-0.5 *vs.* WRS	✔ (0.56)	✘ (0.36)	✘ (0.48)	❍ (0.50)	✘ (0.45)	✘ (0.42)	✔ (0.64)	✔ (0.68)	✘ (0.48)
	WES-0.5 *vs.* WSS	✔ (0.79)	✘ (0.34)	❍ (0.50)	✔ (0.72)	✘ (0.41)	✘ (0.35)	✔ (0.59)	❍ (0.44)	✔ (0.51)
	WES-0.9 *vs.* WRS	✔ (0.66)	✘ (0.37)	❍ (0.49)	❍ (0.50)	✘ (0.48)	❍ (0.46)	❍ (0.57)	✔ (0.64)	❍ (0.50)
	WES-0.9 *vs.* WSS	✔ (0.84)	✘ (0.36)	✔ (0.51)	✔ (0.73)	✘ (0.44)	✘ (0.38)	❍ (0.54)	✘ (0.40)	✔ (0.53)
	WES-M *vs.* WRS	✔ (0.59)	✘ (0.46)	✘ (0.48)	❍ (0.50)	✘ (0.48)	❍ (0.43)	❍ (0.57)	✔ (0.60)	❍ (0.50)
	WES-M *vs.* WSS	✔ (0.81)	✘ (0.45)	❍ (0.51)	✔ (0.73)	✘ (0.44)	✘ (0.37)	❍ (0.53)	✘ (0.35)	✔ (0.53)
$\tau = 2$	WSS *vs.* WRS	✘ (0.23)	✔ (0.54)	✔ (0.52)	✔ (0.52)	✔ (0.51)	✔ (0.64)	✘ (0.40)	✔ (0.72)	✘ (0.47)
	WES-0.1 *vs.* WRS	✘ (0.41)	✘ (0.47)	✔ (0.55)	✔ (0.55)	✘ (0.43)	❍ (0.54)	❍ (0.53)	❍ (0.53)	✘ (0.49)
	WES-0.1 *vs.* WSS	✔ (0.71)	✘ (0.43)	✔ (0.53)	✔ (0.53)	✘ (0.42)	✘ (0.40)	✔ (0.62)	✘ (0.31)	✔ (0.52)
	WES-0.5 *vs.* WRS	✔ (0.78)	✘ (0.45)	✔ (0.51)	✔ (0.51)	✔ (0.52)	❍ (0.54)	❍ (0.50)	❍ (0.50)	✔ (0.52)
	WES-0.5 *vs.* WSS	✔ (0.91)	✘ (0.41)	❍ (0.50)	❍ (0.50)	❍ (0.51)	✘ (0.39)	✔ (0.60)	✘ (0.29)	✔ (0.54)
	WES-0.9 *vs.* WRS	✔ (0.83)	✔ (0.52)	❍ (0.50)	❍ (0.50)	✔ (0.54)	❍ (0.56)	❍ (0.53)	✔ (0.66)	✔ (0.53)
	WES-0.9 *vs.* WSS	✔ (0.93)	✘ (0.48)	❍ (0.49)	❍ (0.49)	✔ (0.52)	❍ (0.44)	✔ (0.61)	❍ (0.43)	✔ (0.55)
	WES-M *vs.* WRS	✔ (0.74)	❍ (0.51)	✔ (0.53)	✔ (0.53)	✔ (0.53)	❍ (0.52)	❍ (0.48)	✔ (0.64)	✔ (0.52)
	WES-M *vs.* WSS	✔ (0.89)	✘ (0.46)	✔ (0.51)	✔ (0.51)	✔ (0.51)	✘ (0.37)	❍ (0.58)	✘ (0.40)	✔ (0.54)
$\tau = 3$	WSS *vs.* WRS	✘ (0.19)	✔ (0.53)	✘ (0.46)	✘ (0.27)	❍ (0.51)	✔ (0.61)	✘ (0.37)	✔ (0.75)	✘ (0.46)
	WES-0.1 *vs.* WRS	✘ (0.47)	❍ (0.50)	✘ (0.53)	❍ (0.52)	✘ (0.41)	❍ (0.51)	❍ (0.47)	❍ (0.57)	✘ (0.49)
	WES-0.1 *vs.* WSS	✔ (0.80)	✘ (0.47)	✔ (0.57)	✔ (0.74)	✘ (0.40)	✘ (0.41)	✔ (0.59)	✘ (0.30)	✔ (0.53)
	WES-0.5 *vs.* WRS	✔ (0.55)	✘ (0.47)	✘ (0.49)	✘ (0.46)	✘ (0.49)	❍ (0.53)	❍ (0.43)	❍ (0.51)	❍ (0.50)
	WES-0.5 *vs.* WSS	✔ (0.84)	✘ (0.44)	✔ (0.52)	✔ (0.69)	✘ (0.48)	❍ (0.43)	❍ (0.56)	✘ (0.26)	✔ (0.54)
	WES-0.9 *vs.* WRS	✘ (0.38)	✘ (0.46)	❍ (0.51)	✘ (0.37)	✔ (0.53)	✔ (0.59)	❍ (0.45)	✔ (0.59)	✘ (0.48)
	WES-0.9 *vs.* WSS	✔ (0.72)	✘ (0.43)	✔ (0.55)	✔ (0.60)	✔ (0.52)	❍ (0.49)	✔ (0.58)	✘ (0.31)	✔ (0.52)
	WES-M *vs.* WRS	❍ (0.50)	✘ (0.47)	❍ (0.49)	✘ (0.37)	✔ (0.53)	❍ (0.53)	❍ (0.45)	❍ (0.56)	✘ (0.49)
	WES-M *vs.* WSS	✔ (0.81)	✘ (0.44)	✔ (0.53)	✔ (0.60)	✔ (0.52)	❍ (0.43)	✔ (0.59)	✘ (0.30)	✔ (0.53)
$\tau = 4$	WSS *vs.* WRS	✘ (0.18)	✔ (0.53)	✔ (0.51)	✘ (0.37)	❍ (0.51)	–	–	–	✘ (0.47)
	WES-0.1 *vs.* WRS	✘ (0.35)	❍ (0.51)	✔ (0.54)	❍ (0.51)	✘ (0.42)	–	–	–	✘ (0.48)
	WES-0.1 *vs.* WSS	✔ (0.73)	✘ (0.48)	✔ (0.53)	✔ (0.64)	✘ (0.42)	–	–	–	✔ (0.52)
	WES-0.5 *vs.* WRS	❍ (0.50)	❍ (0.50)	✔ (0.52)	❍ (0.50)	✘ (0.48)	–	–	–	❍ (0.50)
	WES-0.5 *vs.* WSS	✔ (0.82)	✘ (0.47)	❍ (0.51)	✔ (0.63)	✘ (0.47)	–	–	–	✔ (0.53)
	WES-0.9 *vs.* WRS	✔ (0.52)	❍ (0.49)	❍ (0.51)	✘ (0.39)	✔ (0.52)	–	–	–	❍ (0.50)
	WES-0.9 *vs.* WSS	✔ (0.83)	✘ (0.46)	❍ (0.50)	✔ (0.52)	❍ (0.51)	–	–	–	✔ (0.53)
	WES-M *vs.* WRS	❍ (0.51)	❍ (0.50)	❍ (0.50)	✘ (0.40)	✔ (0.52)	–	–	–	❍ (0.50)
	WES-M *vs.* WSS	✔ (0.82)	✘ (0.47)	✘ (0.49)	✔ (0.53)	✔ (0.51)	–	–	–	✔ (0.53)
$\tau = 5$	WSS *vs.* WRS	✘ (0.21)	✘ (0.46)	❍ (0.50)	✘ (0.42)	✔ (0.52)	–	–	–	✘ (0.47)
	WES-0.1 *vs.* WRS	✘ (0.43)	❍ (0.49)	✘ (0.46)	✘ (0.46)	✘ (0.45)	–	–	–	✘ (0.48)
	WES-0.1 *vs.* WSS	✔ (0.74)	✔ (0.53)	✘ (0.45)	✔ (0.55)	✘ (0.43)	–	–	–	✔ (0.52)
	WES-0.5 *vs.* WRS	❍ (0.51)	❍ (0.50)	✔ (0.52)	✔ (0.52)	✘ (0.48)	–	–	–	❍ (0.50)
	WES-0.5 *vs.* WSS	✔ (0.79)	✔ (0.53)	✔ (0.52)	✔ (0.60)	✘ (0.47)	–	–	–	✔ (0.53)
	WES-0.9 *vs.* WRS	✘ (0.49)	❍ (0.49)	✔ (0.56)	✔ (0.55)	✔ (0.52)	–	–	–	❍ (0.50)
	WES-0.9 *vs.* WSS	✔ (0.78)	✔ (0.53)	✔ (0.56)	✔ (0.63)	❍ (0.50)	–	–	–	✔ (0.54)
	WES-M *vs.* WRS	✘ (0.47)	✘ (0.47)	✔ (0.53)	✔ (0.55)	✔ (0.53)	–	–	–	❍ (0.50)
	WES-M *vs.* WSS	✔ (0.77)	✔ (0.51)	✔ (0.53)	✔ (0.64)	❍ (0.51)	–	–	–	✔ (0.53)
$\tau = 6$	WSS *vs.* WRS	✘ (0.28)	✘ (0.45)	✘ (0.46)	✘ (0.46)	✔ (0.53)	–	–	–	✘ (0.47)
	WES-0.1 *vs.* WRS	✘ (0.45)	✔ (0.52)	✘ (0.48)	✘ (0.46)	✘ (0.44)	–	–	–	✘ (0.49)
	WES-0.1 *vs.* WSS	✔ (0.68)	✔ (0.57)	❍ (0.51)	❍ (0.50)	✘ (0.42)	–	–	–	✔ (0.52)
	WES-0.5 *vs.* WRS	❍ (0.50)	❍ (0.50)	❍ (0.49)	❍ (0.51)	✘ (0.48)	–	–	–	❍ (0.50)
	WES-0.5 *vs.* WSS	✔ (0.73)	✔ (0.56)	✔ (0.53)	✔ (0.55)	✘ (0.46)	–	–	–	✔ (0.53)
	WES-0.9 *vs.* WRS	✔ (0.55)	❍ (0.50)	❍ (0.50)	✔ (0.52)	❍ (0.50)	–	–	–	✔ (0.51)
	WES-0.9 *vs.* WSS	✔ (0.76)	✔ (0.56)	✔ (0.54)	✔ (0.56)	✘ (0.47)	–	–	–	✔ (0.53)
	WES-M *vs.* WRS	✔ (0.53)	✘ (0.48)	❍ (0.50)	✔ (0.53)	❍ (0.50)	–	–	–	❍ (0.50)
	WES-M *vs.* WSS	✔ (0.75)	✔ (0.54)	✔ (0.54)	✔ (0.57)	✘ (0.48)	–	–	–	✔ (0.53)