ניתוח ארבעת הקלטים שהניבו את הטעות הכי גדולה (4,3,3,3) מתוך 130.

הקלט הראשון– ערך שגיאה 4(אינדקס 7 בדוח 2)
U_1_0010_05_6.txt

- 5 מכונות, 10 משימות

Content of machines summed (113, 113, 108, 92, 83)

Content of machines ((67, 46), (40, 39, 34), (93, 10, 5), (92), (83))

- פונקציית המטרה 118 (תזכורת: הוספנו את מספר המכונות)
- אנחנו השגנו 122

נסיון של LPT:

Start LPT found:
target function = 122, num of machines=5
machines content:
bucket1 sum:108, content= (93, 10, 5)
bucket2 sum:92, content= (92)
bucket3 sum:117, content= (83, 34)
bucket4 sum:106, content= (67, 39)
bucket5 sum:86, content= (46, 40)

IMPROVEMENT: bestLocalSol found:
target function = 122, num of machines=5
machines content:
bucket1 sum:98, content= (93, 0, 5)
bucket2 sum:92, content= (92)
bucket3 sum:117, content= (83, 34)
bucket4 sum:106, content= (67, 39)
bucket5 sum:96, content= (46, 40, 10)
IMPROVEMENT: bestLocalSol found:
target function = 122, num of machines=5
machines content:
bucket1 sum:93, content= (93, 0, 0)
bucket2 sum:97, content= (92, 5)
bucket3 sum:117, content= (83, 34)

bucket4 sum:106, content= (67, 39)
bucket5 sum:96, content= (46, 40, 10)
END -------- bestSolutionFound for alg LPT found:
target function = 122, num of machines=5
machines content:
bucket1 sum:93, content= (93)
bucket2 sum:97, content= (92, 5)
bucket3 sum:117, content= (83, 34)
bucket4 sum:106, content= (67, 39)
bucket5 sum:96, content= (46, 40, 10)

- כל השיפורים שהוא מצא הם של פונקציית העזר LMS

נסיון של BESTFIT

Start BESTFIT found:
target function = 142, num of machines=5
machines content:
bucket1 sum:137, content= (93, 5, 39)
bucket2 sum:102, content= (92, 10)
bucket3 sum:83, content= (83)
bucket4 sum:101, content= (67, 34)
bucket5 sum:86, content= (46, 40)
IMPROVEMENT: bestLocalSol found:
target function = 127, num of machines=5
machines content:
bucket1 sum:98, content= (93, 5, 0)
bucket2 sum:102, content= (92, 10)
bucket3 sum:122, content= (83, 39)
bucket4 sum:101, content= (67, 34)
bucket5 sum:86, content= (46, 40)
IMPROVEMENT: bestLocalSol found:
target function = 127, num of machines=5
machines content:
bucket1 sum:98, content= (93, 5, 0)
bucket2 sum:92, content= (92, 0)
bucket3 sum:122, content= (83, 39)
bucket4 sum:101, content= (67, 34)
bucket5 sum:96, content= (46, 40, 10)

IMPROVEMENT: bestLocalSol found:
target function = 127, num of machines=5
machines content:
bucket1 sum:93, content= (93, 0, 0)
bucket2 sum:97, content= (92, 0, 5)
bucket3 sum:122, content= (83, 39)
bucket4 sum:101, content= (67, 34)
bucket5 sum:96, content= (46, 40, 10)
IMPROVEMENT: bestLocalSol found:
target function = 122, num of machines=5
machines content:
bucket1 sum:93, content= (93, 0, 0)
bucket2 sum:97, content= (92, 0, 5)
bucket3 sum:106, content= (67, 39)
bucket4 sum:117, content= (83, 34)
bucket5 sum:96, content= (46, 40, 10)
END -------- bestSolutionFound for alg BESTFIT found:
target function = 122, num of machines=5
machines content:
bucket1 sum:93, content= (93)
bucket2 sum:97, content= (92, 5)
bucket3 sum:106, content= (67, 39)
bucket4 sum:117, content= (83, 34)
bucket5 sum:96, content= (46, 40, 10)

- פרט לשיפור הראשון, כל השיפורים שהוא מצא הם של פונקציית העזר LMS.

ניתוח

מכיוון שהיו 10 משימות, למרות ההגרלה היוניפורמית, יצא משהו לא מאוזן. LPT וגם BESTFIT הם אלגוריתמים חמדניים שככל שמספר המשימות עולה, יכולים להתמודד יותר טוב עם הבעיה. לראיה, הפתרון ההתחלתי של BESTFIT היה די נוראי – 142.

הגדלנו ראש והרצנו פתרון התחלתי של כולם באותה המכונה.

הגענו לאופטימום. והרי הפתרון:

Start sameMachine found:

target function = 514, num of machines=5
machines content:
bucket1 sum:509, content= (93, 92, 83, 67, 46, 40, 39, 34, 10, 5)
bucket2 sum:0, content= (0)
bucket3 sum:0, content= (0)
bucket4 sum:0, content= (0)
bucket5 sum:0, content= (0)
IMPROVEMENT: bestLocalSol found:
target function = 421, num of machines=5
machines content:
bucket1 sum:416, content= (0, 92, 83, 67, 46, 40, 39, 34, 10, 5)
bucket2 sum:93, content= (0, 93)
bucket3 sum:0, content= (0)
bucket4 sum:0, content= (0)
bucket5 sum:0, content= (0)
IMPROVEMENT: bestLocalSol found:
target function = 329, num of machines=5
machines content:
bucket1 sum:324, content= (0, 0, 83, 67, 46, 40, 39, 34, 10, 5)
bucket2 sum:93, content= (0, 93)
bucket3 sum:92, content= (0, 92)
bucket4 sum:0, content= (0)
bucket5 sum:0, content= (0)
IMPROVEMENT: bestLocalSol found:
target function = 246, num of machines=5
machines content:
bucket1 sum:241, content= (0, 0, 0, 67, 46, 40, 39, 34, 10, 5)
bucket2 sum:93, content= (0, 93)
bucket3 sum:92, content= (0, 92)
bucket4 sum:83, content= (0, 83)
bucket5 sum:0, content= (0)
IMPROVEMENT: bestLocalSol found:
target function = 179, num of machines=5
machines content:
bucket1 sum:174, content= (0, 0, 0, 0, 46, 40, 39, 34, 10, 5)
bucket2 sum:93, content= (0, 93)
bucket3 sum:92, content= (0, 92)

bucket4 sum:83, content= (0, 83)
bucket5 sum:67, content= (0, 67)
IMPROVEMENT: bestLocalSol found:
target function = 133, num of machines=5
machines content:
bucket1 sum:128, content= (0, 0, 0, 0, 0, 40, 39, 34, 10, 5)
bucket2 sum:93, content= (0, 93)
bucket3 sum:92, content= (0, 92)
bucket4 sum:83, content= (0, 83)
bucket5 sum:113, content= (0, 67, 46)
IMPROVEMENT: bestLocalSol found:
target function = 122, num of machines=5
machines content:
bucket1 sum:94, content= (0, 0, 0, 0, 0, 40, 39, 0, 10, 5)
bucket2 sum:93, content= (0, 93)
bucket3 sum:92, content= (0, 92)
bucket4 sum:117, content= (0, 83, 34)
bucket5 sum:113, content= (0, 67, 46)
IMPROVEMENT: bestLocalSol found:
target function = 118, num of machines=5
machines content:
bucket1 sum:98, content= (0, 0, 0, 0, 0, 83, 0, 10, 5)
bucket2 sum:93, content= (0, 93)
bucket3 sum:92, content= (0, 92)
bucket4 sum:113, content= (0, 40, 34, 39)
bucket5 sum:113, content= (0, 67, 46)
IMPROVEMENT: bestLocalSol found:
target function = 118, num of machines=5
machines content:
bucket1 sum:93, content= (0, 0, 0, 0, 0, 83, 0, 10, 0)
bucket2 sum:93, content= (0, 93)
bucket3 sum:97, content= (0, 92, 5)
bucket4 sum:113, content= (0, 40, 34, 39)
bucket5 sum:113, content= (0, 67, 46)
END -------- bestSolutionFound for alg sameMachine found:
target function = 118, num of machines=5
machines content:

bucket1 sum:93, content= (83, 10)
bucket2 sum:93, content= (93)
bucket3 sum:97, content= (92, 5)
bucket4 sum:113, content= (40, 34, 39)
bucket5 sum:113, content= (67, 46)

הקלט השני– ערך שגיאה 3 (אינדקס 34 בדוח 2)
U_1_0050_25_3.txt

- 25 מכונות, 50 משימות
- Content of machines summed (109, 108, 110, 100, 92, 110, 110, 90, 90, 108, 108, 110, 110, 110, 110, 110, 107, 103, 107, 110, 109, 107, 108, 110, 111)
- פונקציית המטרה 136 (תזכורת: הוספנו את מספר המכונות)
- אנחנו השגנו 139

פתרון סופי (לא הצלחנו לשפר עם הוספת SAMEMACHINE)

----Our Results-------
best from Our local search found:
target function = 139, num of machines=25
machines content:
bucket1 sum:99, content= (99, 0)
bucket2 sum:108, content= (98, 0, 10)
bucket3 sum:113, content= (94, 19)
bucket4 sum:111, content= (92, 19)
bucket5 sum:102, content= (92, 0, 10)
bucket6 sum:100, content= (91, 9, 0)
bucket7 sum:101, content= (91, 10)
bucket8 sum:114, content= (90, 24)
bucket9 sum:106, content= (90, 16)
bucket10 sum:108, content= (84, 24)
bucket11 sum:108, content= (84, 24)
bucket12 sum:110, content= (82, 28)
bucket13 sum:109, content= (80, 29)
bucket14 sum:109, content= (79, 30)
bucket15 sum:109, content= (75, 34)
bucket16 sum:109, content= (73, 36)
bucket17 sum:108, content= (71, 37)

bucket18 sum:104, content= (69, 35)
bucket19 sum:100, content= (69, 31)
bucket20 sum:109, content= (66, 43)
bucket21 sum:108, content= (64, 44)
bucket22 sum:106, content= (62, 44)
bucket23 sum:100, content= (55, 45)
bucket24 sum:106, content= (53, 45, 8)
bucket25 sum:100, content= (51, 49)

הקלט השלישי– ערך שגיאה 3 (אינדקס 66 בדוח 2)
U_1_0100_25_5

- 25 מכונות, 100 משימות
- Content of machines summed (219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 219, 218, 204)
    - פונקציית המטרה 244 (תזכורת: הוספנו את מספר המכונות)
    - אנחנו השגנו 247
    - פתרון סופי (לא הצלחנו לשפר עם הוספת SAMEMACHINE)

----Our Results-------
best from Our local search found:
target function = 247, num of machines=25
machines content:
bucket1 sum:222, content= (98, 55, 49, 20)
bucket2 sum:222, content= (96, 57, 48, 21)
bucket3 sum:222, content= (96, 57, 47, 22)
bucket4 sum:222, content= (96, 55, 52, 19)
bucket5 sum:222, content= (94, 58, 51, 19)
bucket6 sum:222, content= (93, 60, 46, 23)
bucket7 sum:204, content= (92, 58, 53, 0, 1)
bucket8 sum:222, content= (91, 62, 45, 24)
bucket9 sum:222, content= (87, 66, 45, 24)
bucket10 sum:221, content= (87, 66, 44, 24)
bucket11 sum:220, content= (86, 64, 53, 17)

bucket12 sum:218, content= (86, 64, 52, 16)
bucket13 sum:222, content= (86, 54, 54, 28)
bucket14 sum:220, content= (85, 68, 44, 23)
bucket15 sum:222, content= (85, 54, 54, 29)
bucket16 sum:217, content= (82, 69, 51, 15)
bucket17 sum:215, content= (82, 68, 51, 14)
bucket18 sum:219, content= (81, 70, 42, 26)
bucket19 sum:218, content= (80, 71, 41, 26)
bucket20 sum:217, content= (78, 72, 41, 26)
bucket21 sum:204, content= (78, 72, 40, 14, 0)
bucket22 sum:208, content= (78, 72, 40, 18)
bucket23 sum:222, content= (77, 73, 38, 34)
bucket24 sum:216, content= (77, 72, 54, 13)
bucket25 sum:220, content= (75, 74, 36, 35)

הקלט הרביעי– ערך שגיאה 3 (אינדקס 70 בדוח 2)
U_1_0100_25_9.txt

- 25 מכונות, 100 משימות
- Content of machines summed (203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 198)
- פונקציית המטרה 228 (תזכורת: הוספנו את מספר המכונות)
- אנחנו השגנו 231

----Our Results-------
best from Our local search found:
target function = 231, num of machines=25
machines content:
bucket1 sum:194, content= (99, 60, 35, 0)
bucket2 sum:206, content= (99, 58, 38, 11)
bucket3 sum:206, content= (99, 56, 38, 13)
bucket4 sum:197, content= (98, 61, 35, 0, 3)
bucket5 sum:197, content= (98, 54, 44, 0, 1)
bucket6 sum:204, content= (98, 54, 44, 8)
bucket7 sum:204, content= (97, 54, 45, 8)
bucket8 sum:204, content= (97, 54, 45, 8)

bucket9 sum:199, content= (96, 53, 46, 0, 4)
bucket10 sum:206, content= (95, 52, 46, 13)
bucket11 sum:197, content= (94, 52, 48, 3)
bucket12 sum:200, content= (91, 68, 34, 7)
bucket13 sum:199, content= (91, 67, 32, 9)
bucket14 sum:206, content= (89, 68, 31, 18)
bucket15 sum:206, content= (87, 70, 30, 19)
bucket16 sum:206, content= (87, 69, 29, 21)
bucket17 sum:206, content= (86, 69, 29, 22)
bucket18 sum:205, content= (85, 68, 28, 24)
bucket19 sum:205, content= (84, 68, 28, 25)
bucket20 sum:206, content= (82, 75, 27, 22)
bucket21 sum:204, content= (82, 75, 27, 20)
bucket22 sum:203, content= (82, 75, 26, 20)
bucket23 sum:206, content= (82, 74, 26, 24)
bucket24 sum:201, content= (82, 74, 26, 19)
bucket25 sum:203, content= (80, 77, 25, 12, 9)