

به نام خدا



دانشگاه مهندسی کامپیوتر دانشگاه اصفهان

تست کس های پروژه شبیه ساز صفحه گسترده (Mini-Spreadsheet)

ساختار داده ها - دکتر رضا مضافی

طراحان:

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پاییز ۱۴۰۴

A

B

C

D

E

F

G

H

K

نمونه اجرای تعاملی برنامه (Interactive Session)

در ابتدای اجرای برنامه، کاربر تعداد ستون‌ها و سطرها را وارد می‌کند. سپس برنامه منتظر دریافت دستورات ورودی می‌ماند. در این گام، روند اجرا به صورت تعاملی ادامه می‌یابد.

مثال (۱)

5 4

برنامه ۵ ستون و ۴ سطر تشکیل می‌دهد و جدول را چاپ می‌کند.

	A	B	C	D	E
1	-	-	-	-	-
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-

A1=2

	A	B	C	D	E
1	2	-	-	-	-
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-

B1=2*3

	A	B	C	D	E
1	2	6	-	-	-
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-

A

B

C

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B1=(3*2

	A	B	C	D	E
1	2	!ERR	-	-	-
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-

B1 : Mismatched Parentheses**B1="Hello"**

	A	B	C	D	E
1	2	Hello	-	-	-
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-

C1=A1*2

	A	B	C	D	E
1	2	Hello	4	-	-
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-

D1=0

	A	B	C	D	E
1	2	Hello	4	0	-
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-

A

B

C

D

E

F

G

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K

C1=D1+1

	A	B	C	D	E
--	---	---	---	---	---

1	2	Hello	1	0	-
---	---	-------	---	---	---

2	-	-	-	-	-
---	---	---	---	---	---

3	-	-	-	-	-
---	---	---	---	---	---

4	-	-	-	-	-
---	---	---	---	---	---

B1=

	A	B	C	D	E
--	---	---	---	---	---

1	2	-	1	0	-
---	---	---	---	---	---

2	-	-	-	-	-
---	---	---	---	---	---

3	-	-	-	-	-
---	---	---	---	---	---

4	-	-	-	-	-
---	---	---	---	---	---

B1=-2*3

	A	B	C	D	E
--	---	---	---	---	---

1	2	-6	1	0	-
---	---	----	---	---	---

2	-	-	-	-	-
---	---	---	---	---	---

3	-	-	-	-	-
---	---	---	---	---	---

4	-	-	-	-	-
---	---	---	---	---	---

D1=+2*5+1

	A	B	C	D	E
--	---	---	---	---	---

1	2	-6	12	11	-
---	---	----	----	----	---

2	-	-	-	-	-
---	---	---	---	---	---

3	-	-	-	-	-
---	---	---	---	---	---

4	-	-	-	-	-
---	---	---	---	---	---

E1="Hi"

	A	B	C	D	E
1	2	-6	12	11	Hi
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-

A2=A1+B1

	A	B	C	D	E
1	2	-6	12	11	Hi
2	-4	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-

Fill(A2 , B2 : D2)

	A	B	C	D	E
1	2	-6	12	11	Hi
2	-4	6	23	!ERR	-
3	-	-	-	-	-
4	-	-	-	-	-

D2 : Value Error

A3=D2+1

	A	B	C	D	E
1	2	-6	12	11	Hi
2	-4	6	23	!ERR	-
3	!ERR	-	-	-	-
4	-	-	-	-	-

D2 : Value Error

A3 : Propagated Error from D2

A

B

C

D

E

F

G

H

K

D2 = 5

	A	B	C	D	E
1	2	-6	12	11	Hi
2	-4	6	23	5	-
3	6	-	-	-	-
4	-	-	-	-	-

D2 = A3*2

	A	B	C	D	E
1	2	-6	12	11	Hi
2	-4	6	23	!ERR	-
3	!ERR	-	-	-	-
4	-	-	-	-	-

A3 : Circular Dependency

D2: Circular Dependency

Ctrl+z

	A	B	C	D	E
1	2	-6	12	11	Hi
2	-4	6	23	5	-
3	6	-	-	-	-
4	-	-	-	-	-

E1=D1+1

	A	B	C	D	E
1	2	-6	12	11	12
2	-4	6	23	5	-
3	6	-	-	-	-
4	-	-	-	-	-

A

B

C

D

E

F

G

H

K

Fill(E1 , E2 : E4)

	A	B	C	D	E
1	2	-6	12	11	12
2	-4	6	23	5	6
3	6	-	-	-	!ERR
4	-	-	-	-	!ERR

E3: Formula parse error.

E4: Formula parse error..

A3=

	A	B	C	D	E
1	2	-6	12	11	12
2	-4	6	23	5	6
3	-	-	-	-	!ERR
4	-	-	-	-	!ERR

E3: Formula parse error.

E4: Formula parse error..

Exit

(پایان برنامه)

A

B

C

D

E

F

G

H

K

مثال ٢)

6 4

	A	B	C	D	E	F
1	-	-	-	-	-	-
2	-	-	-	-	-	-
3	-	-	-	-	-	-
4	-	-	-	-	-	-

A1=6*(7-2)

	A	B	C	D	E	F
1	30	-	-	-	-	-
2	-	-	-	-	-	-
3	-	-	-	-	-	-
4	-	-	-	-	-	-

B1=-2*(3+4)/2

	A	B	C	D	E	F
1	30	-7	-	-	-	-
2	-	-	-	-	-	-
3	-	-	-	-	-	-
4	-	-	-	-	-	-

C1=pi

	A	B	C	D	E	F
1	30	-7	3.141593	-	-	-
2	-	-	-	-	-	-
3	-	-	-	-	-	-
4	-	-	-	-	-	-

D1=2.04*7

	A	B	C	D	E	F
1	30	-7	3.141593	14.28	-	-
2	-	-	-	-	-	-
3	-	-	-	-	-	-
4	-	-	-	-	-	-

E1=0

	A	B	C	D	E	F
1	30	-7	3.141593	14.28	0	-
2	-	-	-	-	-	-
3	-	-	-	-	-	-
4	-	-	-	-	-	-

A3=2/1

	A	B	C	D	E	F
1	30	-7	3.141593	14.28	0	-
2	-	-	-	-	-	-
3	2	-	-	-	-	-
4	-	-	-	-	-	-

B3=A3+1/2

	A	B	C	D	E	F
1	30	-7	3.141593	14.28	0	-
2	-	-	-	-	-	-
3	2	2.5	-	-	-	-
4	-	-	-	-	-	-

Fil(B3 , C3:F3)

	A	B	C	D	E	F
1	30	-7	3.141593	14.28	0	-
2	-	-	-	-	-	-
3	2	2.5	3	3.5	4	4.5
4	-	-	-	-	-	-

A3="Hello"

	A	B	C	D	E	F
1	30	-7	3.141593	14.28	0	-
2	-	-	-	-	-	-
3	HI	!ERR	!ERR	!ERR	!ERR	!ERR
4	-	-	-	-	-	-

B3: Value Error

C3: Propagated Error from B3

D3: Propagated Error from C3

E3: Propagated Error from D3

F3: Propagated Error from E3

A3= =1*8*(4-3)^3/8

	A	B	C	D	E	F
1	30	-7	3.141593	14.28	0	-
2	-	-	-	-	-	-
3	1	1.5	2	2.5	3	3.5
4	-	-	-	-	-	-

A2=A1-B3

	A	B	C	D	E	F
1	30	-7	3.141593	14.28	0	-
2	28.5	-	-	-	-	-
3	1	1.5	2	2.5	3	3.5
4	-	-	-	-	-	-

Fill(A2 , B2:F2)

	A	B	C	D	E	F
1	30	-7	3.141593	14.28	0	-
2	28.5	-9	0.641593	11.28	-3.5	!ERR
3	1	1.5	2	2.5	3	3.5
4	-	-	-	-	-	-

F2 : Bad Reference

Ctrl+z

	A	B	C	D	E	F
1	30	-7	3.141593	14.28	0	-
2	28.5	-	-	-	-	-
3	1	1.5	2	2.5	3	3.5
4	-	-	-	-	-	-

A3="Hello"

	A	B	C	D	E	F
1	30	-7	3.141593	14.28	0	-
2	!ERR	-	-	-	-	-
3	Hello	!ERR	!ERR	!ERR	!ERR	!ERR
4	-	-	-	-	-	-

A2: Propagated Error from B3

B3: Value Error

C3: Propagated Error from B3

D3: Propagated Error from C3

E3: Propagated Error from D3

F3: Propagated Error from E3

Fill(A3 , B3:F3)

	A	B	C	D	E	F
1	30	-7	3.141593	14.28	0	-
2	!ERR	-	-	-	-	-
3	Hello	Hello	Hello	Hello	Hello	Hello
4	-	-	-	-	-	-

A2:value error

A2=Sum(A1:E1)

	A	B	C	D	E	F
1	30	-7	3.141593	14.28	0	-
2	40.42159	-	-	-	-	-
3	Hello	Hello	Hello	Hello	Hello	Hello
4	-	-	-	-	-	-

C1=0

	A	B	C	D	E	F
1	30	-7	0	14.28	0	-
2	37.28	-	-	-	-	-
3	Hello	Hello	Hello	Hello	Hello	Hello
4	-	-	-	-	-	-

B2=A2*2-B1-C1

	A	B	C	D	E	F
1	30	-7	0	14.28	0	-
2	37.28	81.56	-	-	-	-
3	Hello	Hello	Hello	Hello	Hello	Hello
4	-	-	-	-	-	-

B1=5

	A	B	C	D	E	F
1	30	5	0	14.28	0	-
2	49.28	93.56	-	-	-	-
3	Hello	Hello	Hello	Hello	Hello	Hello
4	-	-	-	-	-	-

D2=1+Sum(A2:B2)/5

	A	B	C	D	E	F
1	30	5	0	14.28	0	-
2	49.28	93.56	-	29.568	-	-
3	Hello	Hello	Hello	Hello	Hello	Hello
4	-	-	-	-	-	-

C1=-3*(2^2)/7-1.08

	A	B	C	D	E	F
1	30	5	-2.7942	14.28	0	-
2	46.48571	90.76571	-	28.45029	-	-
3	Hello	Hello	Hello	Hello	Hello	Hello
4	-	-	-	-	-	-

Exit

(پایان برنامه)

A

B

C

D

E

F

G

H

K

1

موارد امتیازی

2

پشتیبانی از توابع ریاضی

- گسترش پارسر فرمول برای پشتیبانی از توابع ریاضی مانند SIN, COS, TAN, LOG, SQRT.

3

ورودی نمونه

-	A	B	C	D	E
1	2	3	6	2	-
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-

5

D2=sin(D1)

6

-	A	B	C	D	E
1	2	3	6	2	-
2	-	-	-	0.909297	-
3	-	-	-	-	-
4	-	-	-	-	-

7

8

9

10

11

14