Long Multiplication Algorithm

ian.mcloughlin@gmit.ie

			1	0	2	4
×				1	2	8
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
	1	3	1	0	7	2

```
right align
for each bottom digit:
  new line, append zeros
  for each top digit:
    multiply
    if carried digit:
      add
    if greater than 9:
      carry tens digit
    print units digit
add
```

			1	0	2	4
×				1	2	8
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
	1	3	1	0	7	2

```
right align
for each bottom digit:
  new line, append zeros
  for each top digit:
    multiply
    if carried digit:
      add
    if greater than 9:
      carry tens digit
    print units digit
add
```

			1	0	2	4
×				1	2	8
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
	1	3	1	0	7	2

```
right align
for each bottom digit:
  new line, append zeros
  for each top digit:
    multiply
    if carried digit:
      add
    if greater than 9:
      carry tens digit
    print units digit
add
```

3			1	0	2	4
×				1	2	8
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
	1	3	1	0	7	2

```
right align
for each bottom digit:
  new line, append zeros
  for each top digit:
    multiply
    if carried digit:
      add
    if greater than 9:
      carry tens digit
    print units digit
add
```

3			1	0	2	4
×				1	2	8
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
	1	3	1	0	7	2

```
right align
for each bottom digit:
  new line, append zeros
  for each top digit:
    multiply
    if carried digit:
      add
    if greater than 9:
      carry tens digit
    print units digit
add
```

1			1	0	2	4
×				1	2	8
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
	1	3	1	0	7	2

```
right align
for each bottom digit:
  new line, append zeros
  for each top digit:
    multiply
    if carried digit:
      add
    if greater than 9:
      carry tens digit
    print units digit
add
```

1			1	0	2	4
×				1	2	8
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
	1	3	1	0	7	2

```
right align
for each bottom digit:
  new line, append zeros
  for each top digit:
    multiply
    if carried digit:
      add
    if greater than 9:
      carry tens digit
    print units digit
add
```

			1	0	2	4
×				1	2	8
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
	1	3	1	0	7	2

```
right align
for each bottom digit:
  new line, append zeros
  for each top digit:
    multiply
    if carried digit:
      add
    if greater than 9:
      carry tens digit
    print units digit
add
```

			1	0	2	4
×				1	2	8
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
	1	3	1	0	7	2

```
right align
for each bottom digit:
  new line, append zeros
  for each top digit:
    multiply
    if carried digit:
      add
    if greater than 9:
      carry tens digit
    print units digit
add
```

			1	0	2	4
×				1	2	8
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
	1	3	1	0	7	2

```
right align
for each bottom digit:
  new line, append zeros
  for each top digit:
    multiply
    if carried digit:
      add
    if greater than 9:
      carry tens digit
    print units digit
add
```

			1	0	2	4
×				1	2	8
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
	1	3	1	0	7	2

```
right align
for each bottom digit:
  new line, append zeros
  for each top digit:
    multiply
    if carried digit:
      add
    if greater than 9:
      carry tens digit
    print units digit
add
```

			1	0	2	4
×				1	2	8
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
	1	3	1	0	7	2

```
right align
for each bottom digit:
  new line, append zeros
  for each top digit:
    multiply
    if carried digit:
      add
    if greater than 9:
      carry tens digit
    print units digit
add
```

			1	0	2	4
×				1	2	8
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
	1	3	1	0	7	2

```
right align
for each bottom digit:
  new line, append zeros
  for each top digit:
    multiply
    if carried digit:
      add
    if greater than 9:
      carry tens digit
    print units digit
add
```