1 SUMMARY

To compute values of the **exponential integral**

$$E(x) = \int_x^\infty \frac{e^{-t}}{t}\, dt \quad x > 0$$

The subroutine uses approximations of the form

(a) for $0 < x \le 4$

$$\sum_{n=0}^{21} a_n \left(\frac{x}{4}\right)^n + \log x$$

(b) for $x > 4$

$$\sum_{n=0}^{20} b_n \left(\frac{4}{x}\right)^n \exp(-x)$$

ATTRIBUTES — Version: 1.0.0. **Types:** `FC11A`; `FC11AD`. **Original date:** July 1963. **Origin:** S.Marlow, Harwell.

2 HOW TO USE THE PACKAGE

The single precision version

```
CALL FC11A(E,X)
```

The double precision version

```
CALL FC11AD(E,X)
```

E   is a `REAL` (`DOUBLE PRECISION` in the D version) variable which is set by the subroutine to the computed value of the function $E(x)$.

X   is a `REAL` (`DOUBLE PRECISION` in the D version) variable which must be set by the user to the value of the argument x. **Restriction:** $x \ge 0$, if $x < 0$ the function is evaluated with $|x|$.

3 GENERAL INFORMATION

Use of common: none.

Workspace: none.

Other subroutines: none.

Input/Output: none.

Restrictions:

$x \ge 0$.

Accuracies:

6 figures using 4-byte arithmetic

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12 figures using 8-byte arithmetic