

Pensieve header: A profiler for Mathematica, Nov 2016 mods of July 1994 version.

```
Print["This is Profile.m, Nov 2016 mods of July 1994 version"];

BeginPackage["Profile`"]

BeginProfile::usage = "BeginProfile[] begins a profiling session, with root name \
ProfileRoot. BeginProfile[root] does same with root name root."

ProfileRoot::usage = "The default root label of a profile."

EndProfile::usage = "EndProfile[] ends a profiling session and returns a ProfileData object conta

$Profiling::usage = "When $Profiling is True, profiling is on."

ProfileOn::usage = "ProfileOn[] turns profiling on."

ProfileOff::usage = "ProfileOff[] turns profiling off."

Profile::usage = "Profile[label,expr] evaluates expr while taking profiling \
data under the label label."

PP::usage = "PPlabel@expr is equivalent to Profile[label,expr]."

Called::usage = "n Called[parent,child] means that child was called n times \
by parent."

TimeUnder::usage = "t TimeUnder[parent,child] means that child spent time t \
under parent."

ProfileData::usage = "The result of EndProfile. Has format \
ProfileData[root,calls,total,self], where root is the profile root\
label, calls is a linear combination of tags with head Called, and\
total and self are linear combinations of tags with head TimeUnder."

PrintProfile::usage = "PrintProfile[root] prints the current profiling data under root \
(defaults to the current profile)."
```

```
Begin["`private`"]

ProfileOff[] := (
  $Profiling = False;
  Attributes[Profile] = {HoldFirst};
  Profile[Label_, expr_] := expr
);
ProfileOff[]
```

```

ProfileOn[] := (
  $Profiling=True;
  Attributes[Profile]={HoldRest};
  Profile[Label_,expr_] := (
    Block[
      {
        PreviousLabel=CurrentLabel,
        CurrentLabel=Label,
        EntryTime=TimeUsed[],
        AdjustedEntryTime
      },
      AdjustedEntryTime = EntryTime;
      CallingHistory += Called[PreviousLabel,CurrentLabel];
      value=expr;
      TotalTime += (TimeSpent=(TimeReading=TimeUsed[])-EntryTime) *
        TimeUnder[PreviousLabel,CurrentLabel];
      SelfTime += (TimeReading-AdjustedEntryTime) *
        TimeUnder[PreviousLabel,CurrentLabel];
    ];
    AdjustedEntryTime += TimeSpent;
    value
  )
)

```

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PPLabel_ := Function[expr, Profile[Label, expr], {HoldAll}]

```

```

BeginProfile[] := BeginProfile[ProfileRoot]
BeginProfile[root_] := (
  ProfileOn[];
  CallingHistory = TotalTime = SelfTime = 0;
  RootEntryTime = AdjustedEntryTime = TimeUsed[];
  $ProfileRoot = CurrentLabel = root
)

```

```

EndProfile[] := (
  ProfileOff[];
  ProfileData[$ProfileRoot,CallingHistory,TotalTime,SelfTime]
)

```

```

$CurrentProfile := ProfileData[$ProfileRoot,CallingHistory,TotalTime,SelfTime]

```

```

TimeIn[Label_] := TimeIn[Label,$CurrentProfile]
TimeIn[Label_,ProfileData[_,_,_st_]] := st /. {
  TimeUnder[_,Label] -> 1,
  TimeUnder[_,_] -> 0
}

```

```
ProfileLabels[] := ProfileLabels[$CurrentProfile]
ProfileLabels[pd_ProfileData] := Block[
  {out={}},
  pd[[2]] /. Called[lbls__] :> (out=Union[out,{lbls}]);
  Reverse[Last /@ Sort[{TimeIn[#,pd],#}& /@ out]]
]
```

```

PrintProfile[pd_ProfileData] :=
  PrintProfile[#,pd]& /@ ProfileLabels[pd]
PrintProfile[]:=PrintProfile[$CurrentProfile]
PrintProfile[Label_] := PrintProfile[Label,$CurrentProfile]
PrintProfile[Label_,ProfileData[pr_,ch_,tt_,st_]] := Block[
  {labelist={},i,l1,l2},
  l1=Floor[N[Log[10, ch /. _Called -> 1]]];
  l2=3+Floor[N[Log[10, tt /. _TimeUnder -> 1]]];
  Print[Label,": called ",
    ch /. {Called[_,Label] -> 1, Called[_,_] -> 0},
    " times, time in ",
    TimeIn[Label],
    "/",
    tt /. {TimeUnder[_,Label] -> 1, TimeUnder[_,_] -> 0}
  ];
  ch /. Called[Lbl_,Label] := (labelist=Union[labelist,{Lbl}]););
  If[Length[labelist]>0,
    Print[" Parents:"];
    Do[
      Print[StringForm["      (``) ``/`` under ``",
        PaddedForm[Coefficient[ch,Called[labelist[[i]],Label]],l1],
        PaddedForm[Coefficient[st,TimeUnder[labelist[[i]],Label]],{l2,3}],
        PaddedForm[Coefficient[tt,TimeUnder[labelist[[i]],Label]],{l2,3}],
        labelist[[i]]
      ]],
      {i,1,Length[labelist]}
    ]
  ];
  labelist={};
  ch /. Called[Label,Lbl_] := (labelist=Union[labelist,{Lbl}]););
  If[Length[labelist]>0,
    Print[" Children:"];
    Do[
      Print[StringForm["      (``) ``/`` above ``",
        PaddedForm[Coefficient[ch,Called[Label,labelist[[i]]]],l1],
        PaddedForm[Coefficient[st,TimeUnder[Label,labelist[[i]]]],{l2,3}],
        PaddedForm[Coefficient[tt,TimeUnder[Label,labelist[[i]]]],{l2,3}],
        labelist[[i]]
      ]],
      {i,1,Length[labelist]}
    ]
  ];
  Print[""];
]

```

```
End[]; EndPackage[];
```