Extension de style TeXjazz-askreply

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Résumé

*L'extension de style LaTeX « **askreply** » a pour objet de gérer l'affichage des environnements d'exercices et de questionnaires à choix multiples — QCM — au sein d'un document, de même que leurs contreparties respectives : environnements de solutions et de réponses. Chaque environnement peut être enregistré pour reporter son affichage, disposer d'une base de données d'exercices et de quiz ou partager leur rédaction avec d'autres contributeurs. Par ailleurs, ce style a été conçu parallèlement à l'extension « **assignpoints** » qui, comme son nom l'indique, permet d'attribuer et de recouvrir des points associés aux exercices et aux questionnaires.*

Sommaire

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1 Introduction et usage élémentaire

Cette extension LaTeX peut s'utiliser pour disposer d'une mise en forme des environnements d'exercices et de questionnaires à choix multiples — QCM ou quiz. Elle propose effectivement une conception graphique fondée sur le très puissant outil PGF/TikZ et le remarquable paquet « **tcolorbox** ».

Sa teneur ne s'arrête bien entendu pas là, car techniquement, le caractère novateur de cette extension est d'exploiter les possibilités du format PDF avec les couches *Optional Content Groups* (OCG), mais surtout *Optional Content Membership Dictionaries* (OCMD) désormais implémentées et accessibles pour LaTeX. Ces fonctionnalités sont au fondement de l'interactivité des quiz (cf. §3.2).

Le style « **askreply** » peut se charger seul ou en conjonction avec l'extension « **assignpoints** » pour gérer la notation des exercices et des quiz. Dans cette hypothèse, « **askreply** » doit être chargée *après* « **assignpoints** ».

1.1 Chargement de l'extension

Pour charger l'extension, il suffit de saisir en préambule de document.

```
\usepackage{texjazz-askreply}
```

Si cela ne fonctionne pas car ce paquet n'est pas disponible dans votre distribution LaTeX, une copie du fichier « askreply.sty » est à placer dans le même répertoire que votre document. Pour une utilisation régulière, il est conseillé de l'installer dans votre arborescence locale, sous le répertoire \texmf par exemple, puis de rafraîchir les accès aux fichiers par les commandes texhash ou tlmgr.

Au risque d'insister, si l'extension « **assignpoints** » est également chargée, il faut impérativement le faire *avant* le style « **askreply** ».

```
\usepackage{texjazz-assignpoints}
\usepackage{texjazz-askreply}
```

Par ailleurs, il faut savoir que l'extension affiche par défaut les entêtes des différents environnements en anglais. Le style « **askreply** » propose les options de langues en français et en allemand (cf. §3.1) :

```
\usepackage[french]{texjazz-askreply}% Français
\usepackage[german]{texjazz-askreply}% Allemand
```

Pour que les différentes références croisées (éléments OCMD) et couches graphiques (éléments PGF/TikZ) s'ajustent, il faut au moins quatre compilations successives (respectivement deux par famille d'éléments).

1.2 Composition d'un premier exercice/quiz

Afin d'illustrer le propos, nous pouvons nous engager dans la composition d'un premier exercice élémentaire.

```
\begin{exercise}[title=Addition simple]
  Que donne 1+1 ? % Exercice avec solution associée
\end{exercise}
```


EXERCICE 1 — ADDITION SIMPLE

Que donne $1 + 1$?

■ *Solution page 4*

\begin{exercise}[⟨*key-value options*⟩]

On constate que la mise en forme est sobre et élégante [a]. Le numéro de l'exercice et, le cas échéant, la page où se trouve la solution sont indiqués. Par ailleurs, un titre optionnel peut être introduit pour mentionner le thème de l'exercice. Enfin, un pictogramme affiche en marge le type d'environnement dont il s'agit. Ce visuel peut être [b] changé, mais par défaut, il sous-tend un exercice de codage à réaliser avec un ordinateur. Le détail des options possibles est exposé en §3.4 en page 12.

```
\begin{exercise}[symbol=\faPenFancy, title=Addition simple]
  Que donne $1+1$ ? % Changement de symbole d'appel d'exercice
\end{exercise}
```


EXERCICE 2 — ADDITION SIMPLE

Que donne $1 + 1$?

\begin{quiz}[⟨*key-value options*⟩]

Les environnements de quiz sont tout aussi dépouillés et sont également affublés d'un numéro, d'un titre optionnel et d'un pictogramme modifiable qui, par défaut, symbolise une liste — sous-entendu de questions.

```
\begin{quiz}[title=Formats de couleur]
  Quelles composantes de couleur forment une image RGB ? (Plusieurs choix)
\end{quiz}
```


QUESTIONNAIRE 1 — FORMATS DE COULEUR

Quelles composantes de couleur forment une image RGB ? (Plusieurs choix)

\begin{solution}[⟨*key-value options*⟩]

Comme pendant direct des environnements d'exercice sont offerts des environnements de solution, là encore avec leur signalétique consacrée : pictogramme associé et rappel du titre et de la page de l'énoncé d'exercice.

---

a. Néanmoins, rien d'exceptionnel en utilisant l'extension « `tcolorbox` ».
b. La police de caractères « `fontawesome` » de l'extension éponyme est ici utilisée.

Dans une utilisation élémentaire, l'environnement de solution n'emploie pas d'option particulière : le titre et le numéro d'exercice auxquels se réfère la solution sont automatiquement détectés. En revanche, dans une configuration plus avancée, les solutions peuvent être ajustées plus précisément (cf. §3.1 et 3.4).

```
\begin{solution}
Après réflexion intense, il semble que $1+1=2$
\end{solution}
```

> ### 💡 SOLUTION 1 — ADDITION SIMPLE (page 3)
>
> Après réflexion intense, il semble que $1 + 1 = 2$

Au cas ou plusieurs énoncés d'exercice se succèdent sans que certains d'entre eux n'aient de solution, il faut explicitement saisir l'identifiant de l'exercice à partir duquel on recommence la comptabilisation des solutions. Et ainsi de suite si les solutions sont fragmentés au sein du document considéré. Le détail du mécanisme est exposé dans la documentation du paquet « **assignpoints** » et au §3.1.

2   Attribution et récupération de points

Cette section se propose de conduire un rapide rappel des commandes de comptabilisation de point(s). Renvoi est fait à la documentation de l'extension de style « **assignpoints** » pour un descriptif plus avancé.

2.1   Numération et niveaux des environnements

\points{⟨*points-number*⟩}

La commande d'attribution des points de notation est **\points**{⟨*points-number*⟩}. En y faisant appel plusieurs fois dans un même environnement, les points s'additionnent. Considérons alors le code qui suit.

```
\begin{exercise}[title=Équation simple, level=basic]
  Déterminer un nombre $x$ tel que $3 \cdot x = 15$\points{0.5} et expliquer
  la démarche adoptée qui a permis d'obtenir ce résultat.\points{1.5}
\end{exercise}
```

Il apporte la composition subséquente.

> ### 🖳 EXERCICE 3 — ÉQUATION SIMPLE   2 POINTS ●○○
>
> Déterminer un nombre x tel que $3 \cdot x = 15$ et expliquer la démarche qui a permis d'obtenir ce résultat.

Le total des points de l'exercice s'affiche à droite de l'entête. On remarque que si cette somme de points est un entier, la partie décimale « `<int>.0` » est tronquée. En outre, en marge de droite de l'entête, une signalétique de trois petits voyants

indiquent le niveau du public auquel s'adresse l'exercice : basique, intermédiaire ou avancé. Ces niveaux sont contrôlés par l'option `level=basic/intermediate/advanced`.

\itempoints{⟨*points-number*⟩}

La commande **\itempoints**{⟨*points-number*⟩} est « silencieuse », dans le sens ou elle ne s'affiche pas directement. Dans le cas ou l'accumulation de points est structurée en liste explicite (environnements **itemize** ou **enumerate**), il est parfois pratique, au-delà de la comptabilisation, d'indiquer directement les points associés aux items. C'est réalisable par le biais de la commande **\itempoints**{⟨*points-number*⟩}.

```
\begin{exercise}[title=Équation simple, level=basic]
  Résoudre les problèmes suivants.
  \begin{enumerate}
    \item Déterminer un nombre
          $x$ tel que $3 \cdot x = 15$. \itempoints{0.5}
    \item Expliquer la démarche adoptée
          pour obtenir ce résultat. \itempoints{1.5}
  \end{enumerate}
\end{exercise}
```

> **EXERCICE 4 — ÉQUATION SIMPLE**   2 POINTS ●○○
>
> Résoudre les problèmes suivants.
> 1. Déterminer un nombre x tel que $3 \cdot x = 15$.   (0,5)
> 2. Expliquer la démarche adoptée pour obtenir ce résultat.   (1,5)

\itempoints*{⟨*points-number*⟩}

Une même approche s'applique aux quiz. Admettons la saisie de code à venir.

```
\begin{quiz}[title=Formats de couleur]
Répondre aux questions. Plusieurs assertions possibles.
\begin{itemize}
  \item Quelles composantes de couleur
        forment une image RGB ? \itempoints*{1.0}
  \item Quelles composantes de couleur
        forment une image CYMK ? \itempoints*{2}
\end{itemize}
\end{quiz}
```

> **QUESTIONNAIRE 2 — FORMATS DE COULEUR**   3 POINTS
>
> Répondre aux questions. Plusieurs assertions possibles.
> ▸ Quelles composantes de couleur forment une image RGB ?   (1 point)
> ▸ Quelles composantes de couleur forment une image CYMK ?   (2 points)

En dehors de l'esthétique cousine, on remarque que l'emploi de la version étoilée de la macro **\itempoints***{⟨*points-number*⟩} permet de rajouter au nombre de

point(s) une « unité » de comptabilisation, c.-à-d. « point » et « points » pour respectivement le singulier et le pluriel.

2.2 Recouvrement et synthèse des points

La rédaction des exercices (respectivement des quiz) étant effectuée et l'attribution de points accomplie, les commandes de recouvrement et d'affichage des points peuvent être présentées. Encore une fois, les détails sont disponibles en consultant la documentation de l'extension `assignpoints` ; nous nous contentons ici d'en faire une synthèse, versions simples comme étoilées qui rajoutent l'unité de point(s) au nombre à afficher.

`\getpoints<*>{`⟨*exercise-number*⟩`}`

`\getpoints<*>[`**exercise**`]{`⟨*exercise-number*⟩`}`

`\getpoints<*>[`**quiz**`]{`⟨*quiz-number*⟩`}`

`\numberofexercises`
`\exercisetotalpoints`
`\exercisetotalpoints*`
`\getpoints{`⟨*ex-nb*⟩`}`
`\getpoints*{`⟨*ex-nb*⟩`}`
`\getpoints[`**exercise**`]{`⟨*ex-nb*⟩`}`
`\getpoints*[`**exercise**`]{`⟨*ex-nb*⟩`}`
`\numberofquizzes`
`\quiztotalpoints`
`\quiztotalpoints*`
`\getpoints[`**quiz**`]{`⟨*qz-nb*⟩`}`
`\getpoints*[`**quiz**`]{`⟨*qz-nb*⟩`}`

— `\numberofexercises` donne le nombre d'exercices dans tout le document ;

— `\exercisetotalpoints` et `\exercisetotalpoints*` apportent directement la somme de tous les points sur l'ensemble des exercices ;

— `\getpoints{`⟨*i*⟩`}` et `\getpoints*{`⟨*i*⟩`}` ou `\getpoints<*>[`**exercise**`]{`⟨*i*⟩`}` conduisent au total des points du « $i^{\text{ième}}$ » exercice numéroté.

— `\numberofquizzes` retourne le nombre de questionnaires du document ;

— `\quiztotalpoints` et `\quiztotalpoints*` récupèrent la somme des points sur l'ensemble des questionnaires du document ;

— à l'instar des exercices, `\getpoints[`**quiz**`]{`⟨*i*⟩`}` et `\getpoints*[`**quiz**`]{`⟨*i*⟩`}` fournissent le total des points du « $i^{\text{ième}}$ » questionnaire.

À noter que l'information nécessaire à ces macros est retrouvée à partir des valeurs enregistrées dans le fichier auxiliaire (extension « .aux ») lors de la première compilation LATEX. Pour obtenir une notation correctes, il faut sur ces aspects compiler [c] le document au moins une seconde fois.

À titre d'illustration, on donne le code ci-dessous.

```
L'exercice 4 a \getpoints{4} points, il y a \numberofexercises\
exercices avec un total de \exercisetotalpoints*\.
En contrepartie, le questionnaire 2 a à son actif
\getpoints*[quiz]{2} et il y a \numberofquizzes\ questionnaires
pour un total de \quiztotalpoints\ points.
```

Après compilation cela produit la phrase suivante : « *L'exercice 4 a 2 points, il y a 5 exercices avec un total de 11 points. En contrepartie, le questionnaire 2 a à son actif 3 points et il y a 3 questionnaires pour un total de 5,5 points* ».

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c. Une compilation à l'issue de laquelle des points d'interrogation s'affichent en italique —*??* — signifie qu'il faut la réitérer. En revanche, un affichage en caractères gras —**??** — indique une erreur de recouvrement dans les valeurs de points.

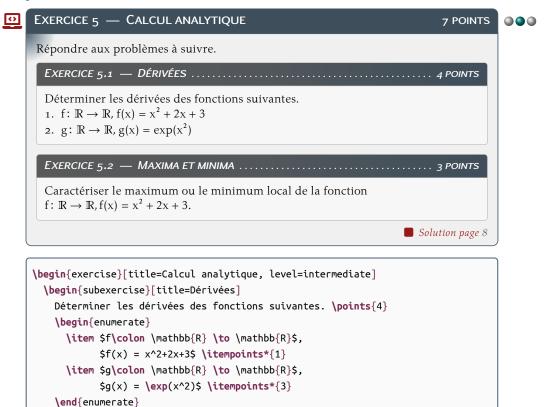# 3 Ajustements et options

3.1 Structuration des exercices

À l'occasion, si un exercice (resp. un questionnaire) amène à se présenter avec des sous-parties (par exemple, un sujet général décomposé en plusieurs domaines spécifiques), l'extension « **assignpoints** » offre la possibilité de segmenter la formulation d'un énoncé en sous-exercices (**subexercise**) et en questions (**quizquestion**) pour structurer le document. Comme parallèle aux sous-exercices, l'extension offre des environnements de sous-solutions (**subsolution**).

\begin{**subexercise**}[⟨*key-value options*⟩]

\begin{**quizquestion**}[⟨*key-value options*⟩]

\begin{**subsolution**}[⟨*key-value options*⟩]

Ainsi, ces environnements intriqués fonctionnent à l'identique de leurs homologues de rang supérieur, néanmoins ils ne peuvent uniquement s'utiliser qu'au sein de ceux-ci. Un « **subexercise** » est alors contenu dans un « **exercise** », une « **quizquestion** » inclue à un « **quiz** » et une « **subsolution** » dans une « **solution** ».

Ce qui suit résulte d'un exemple de structuration d'un exercice en deux sous-parties bien distinctes.

EXERCICE 5 — CALCUL ANALYTIQUE   7 POINTS ○●○

Répondre aux problèmes à suivre.

> **EXERCICE 5.1 — DÉRIVÉES** .... *4 POINTS*
>
> Déterminer les dérivées des fonctions suivantes.
> 1. $f\colon \mathbb{R} \to \mathbb{R}, f(x) = x^2 + 2x + 3$
> 2. $g\colon \mathbb{R} \to \mathbb{R}, g(x) = \exp(x^2)$

> **EXERCICE 5.2 — MAXIMA ET MINIMA** .... *3 POINTS*
>
> Caractériser le maximum ou le minimum local de la fonction
> $f\colon \mathbb{R} \to \mathbb{R}, f(x) = x^2 + 2x + 3$.

■ *Solution page 8*

```
\begin{exercise}[title=Calcul analytique, level=intermediate]
  \begin{subexercise}[title=Dérivées]
    Déterminer les dérivées des fonctions suivantes. \points{4}
    \begin{enumerate}
      \item $f\colon \mathbb{R} \to \mathbb{R}$,
            $f(x) = x^2+2x+3$ \itempoints*{1}
      \item $g\colon \mathbb{R} \to \mathbb{R}$,
            $g(x) = \exp(x^2)$ \itempoints*{3}
    \end{enumerate}
```

```
  \end{subexercise}
  \begin{subexercise}[title=Maxima et minima]
    Caractériser le maximum ou le minimum local
    de la fonction \\
    $f\colon \mathbb{R} \to \mathbb{R}, f(x) = x^2+2x+3$. \points{3}
  \end{subexercise}
\end{exercise}
```

On vérifie alors qu'un « **subexercise** » est bien uniquement inclus au sein d'un exercice et qu'il n'est pas permis d'imbriquer des environnements « **subexercise** » entre eux. L'extension signale une erreur si tel n'est pas le cas.

Pour les environnements de « **solution** » et de « **subsolution** », on a la même correspondance qu'avec les exercices et les sous-exercices. Néanmoins, pour illustrer la comptabilisation des sous-solutions en rapport à l'exercice précédent, on doit explicitement saisir son numéro d'identification, ici 5. En effet, comme les exercices 2 à 4 n'ont pas de solution dans ce document, le comportement par défaut serait d'incrémenter d'une unité le numéro de solution, à savoir ici 2 (puisque le premier exercice possède une solution).

Qu'il s'agisse des solutions et sous-solutions, on peut noter que les titres et les points qui leurs sont attribués sont automatiquement recouvrés et affichés.

```
\begin{solution}[ID=5]
  \begin{subsolution}
    \begin{enumerate}
      \item pour $f\colon \mathbb{R} \to \mathbb{R}$, $f(x) = x^2+2x+3
    \Rightarrow f^\prime(x) = 2x+2$
      \item pour $g\colon \mathbb{R} \to \mathbb{R}$, $g(x) = \exp(x^2)
    \Rightarrow g^\prime(x) = 2x\cdot\exp(x^2)$
  \end{enumerate}
  \end{subsolution}
  \begin{subsolution}
    Une fonction polynôme de degré 2, à savoir $p(x)=ax^2+bx+c$,
    admet un extremum pour $x=-b/a$. Donc, pour la fonction
    $f\colon \mathbb{R} \to \mathbb{R}, f(x) = x^2+2x+3$, on a $x_e=-2$.
  \end{subsolution}
\end{solution}
```

> **SOLUTION 5 — CALCUL ANALYTIQUE** (page 7)   **7 POINTS**
>
> Les résultats attendus sont à suivre.
>
> > **SOLUTION 5.1 — DÉRIVÉES** .... *4 POINTS*
> >
> > Les dérivées des fonctions suivantes sont :.
> > 1. pour f: $\mathbb{R} \to \mathbb{R}$, $f(x) = x^2 + 2x + 3 \Rightarrow f'(x) = 2x + 2$
> > 2. pour g: $\mathbb{R} \to \mathbb{R}$, $g(x) = \exp(x^2) \Rightarrow g'(x) = 2x \cdot \exp(x^2)$

Une fonction polynôme de degré 2, à savoir $p(x) = ax^2 + bx + c$, admet un extremum pour $x = -b/a$. Donc, pour la fonction $f : \mathbb{R} \to \mathbb{R}, f(x) = x^2 + 2x + 3$, on a $x_e = -2$.

3.2 Questionnaires à choix multiples

Dans le principe, la même approche s'applique au tandem d'environnements « `quiz` » et « `quizquestion` ». Néanmoins, le caractère novateur de l'extension `askreply` par rapport à `assignpoints` est de proposer un nouvel environnement `quizquestion` fondé sur les fonctionnalités *Optional Content Groups* (OCG) et *Optional Content Membership Dictionaries* (OCMD) du format PDF. Cela permet une interactivité des quiz avec une interface proche de celles des Mooc (voir par exemple Fun-Mooc, France Université numérique). Pour une présentation plus complète des détails techniques, se référer au §3.4 et au code source. Ici est uniquement exposée l'interface utilisateur.

`quizquestion`
`quizquestion*`
`\mcqproposal`

Les questionnaires à choix multiples sont, à l'instar des exercices, structurés en questions possédant un titre optionnel et une numération de points. Ces questions sont elles-mêmes associées à des propositions de réponses *via* la macro `\mcqproposal`. La syntaxe générale est fournie par le code à suivre.

```
\begin{quiz}[title=<title>]
  \begin{quizquestion}<display>[pos]{correct}{wrong}%
                       {questiontitle}(dimx,dimy)<explanation>
  \mcqproposal{text-1}
  ...
  \mcqproposal{text-n}
  \end{quizquestion}
\end{quiz}
```

`\begin{quizquestion}<⟨displ.⟩>[⟨pos.⟩]{⟨correct⟩}{⟨wrong⟩}{⟨opt. title⟩}(⟨dimx,dimy⟩)<⟨expl.⟩>`
Le détail des différents champs de l'environnement `quizquestion` s'appuie sur la logique à suivre pour les arguments obligatoires comme optionnels.

`display mode = <margin|tooltip>`   Par défaut : `<margin>`
Manière optionnelle d'afficher la réponse, en marge (par défaut), `<margin>` ou en infobulle, `<tooltip>`.

`position = [b|c|t]`   Par défaut : `[b]`
Positionnement optionnel de l'encart de réponse : en bas (par défaut) `[b]` pour *bottom*, au centre `[c]` pour *centered* ou en haut `[t]` pour *top*.

`correct answers = {⟨comma separated list of proposal numbers⟩}`
Numéros des propositions correctes (obligatoires), séparées par des virgules.

`wrong answers = {⟨comma separated list of proposal numbers⟩}`
Numéros des propositions fausses (obligatoires), séparées par des virgules.

optional title = {⟨*optional title*⟩}   (initialement vide)

> Titre optionnel.

dimx,dimy = (dimx,dimy)   Par défaut : (`6pt`,`12pt`)

> Ajustement optionnel des coordonnées de l'affichage de la réponse (`<tooltip>`).

explanations = `<text>`   Par défaut : `<Sorry, no answer available>`

> Texte optionnel mais souhaitable d'explication.

En appliquant la syntaxe à un cas concret, on peut considérer le code donné ci-dessous qui illustre les options essentielles.

```
\begin{quiz}[title=Histoire de couleur]
  \begin{quizquestion}{1,3,4}{2,5,6}{Modèle RGB/RVB}
  <Le modèle « Rouge, Vert, Bleu » correspond au couleurs primaires d'une image>
    Quelles sont les composantes d'une image RGB/RVB ? \\
    Plusieurs assertions possibles. \points{1.5}
      \mcqproposal{Rouge}
      \mcqproposal{Jaune}
      \mcqproposal{Vert}
      \mcqproposal{Bleu}
      \mcqproposal{Cyan}
      \mcqproposal{Magenta}
  \end{quizquestion}
  \begin{quizquestion*}<tooltip>{4}{1,2,3,5}{Cheval de Henry IV}(4pt,24pt)
    Quelle est la couleur du cheval blanc de Henry IV ? \points{1}
      \mcqproposal{Noire}
      \mcqproposal{Jaune}
      \mcqproposal{Grise}
      \mcqproposal{Blanche}
      \mcqproposal{Brune}
  \end{quizquestion*}
\end{quiz}
```

QUESTIONNAIRE 3 — HISTOIRE DE COULEURS   2,5 POINTS

QUESTIONNAIRE 3.1 — MODÈLE RGB/RVB . . . . *1,5 POINTS*

Quelles sont les composantes d'une image RGB/RVB ?
Plusieurs assertions possibles.

☐ Rouge

☐ Jaune

☐ Vert

☐ Bleu

☐ Cyan

☐ Magenta

VÉRIFIER	AFFICHER LA RÉPONSE	RÉINITIALISER

QUESTIONNAIRE 3.2 — CHEVAL DE HENRY IV .... *1 POINT*

Quelle est la couleur du cheval blanc de Henry IV ?

○ Noire

○ Jaune

○ Grise

○ Blanche

○ Brune

VÉRIFIER	AFFICHER LA RÉPONSE	RÉINITIALISER

Automatiquement, la composition du questionnaire s'opère avec les boutons d'interaction dont les noms sont explicites : l'utilisateur peut cocher les cases qu'il pense être une bonne réponse, vérifier son choix ou réinitialiser le quiz, et enfin afficher les explications relatives aux propositions valides. Pour le moment, il n'y a pas de compteur de points, ni de bloqueur de visualisation des résultats corrects ; c'est au lecteur de jouer le jeu.

\begin{**quizquestion***}<⟨*displ.*⟩>[⟨*pos.*⟩]{⟨*correct*⟩}{⟨*wrong*⟩}{⟨*opt. title*⟩}(⟨*dimx,dimy*⟩)<⟨*expl.*⟩>

On doit aussi noter que la version étoilée de l'environnement **quizquestion*** offre des cercles à cocher au lieu de carrés pour la version sans étoile. En fait, cela correspond à une tradition en IHM — Interface humain-machine — qui veut que lorsque plusieurs choix ou ici réponses sont possibles, les propositions sont affublées d'un carré à cocher (*check box*) alors que dans le cas d'une seule réponse envisageable c'est un cercle à cocher (*radio button*). En outre, c'est pour cela que la syntaxe n'accepte qu'une seule proposition correcte dans ce dernier cas.

3.3 Options linguistiques

Les conventions de langue varient. Évidemment, les mots qui désignent les points et les intitulés de boutons sont différents d'un langage à l'autre, mais également les séparateurs de décimales des nombres. On peut, là encore, se référer à l'extension **assignpoints**, mais ici trois options de langue sont également [d] possibles : anglais (par défaut), français et allemand.

L'option linguistique est assez logiquement activée par le nom de la langue de composition du document :

---

d. Pour le moment, seul a été testé le système Babel et uniquement pour l'anglais et le français.

— usepackage{**texjazz-assignpoints**}→ anglais par défaut ;
— usepackage[french]{**texjazz-assignpoints**}→ français ;
— usepackage[german]{**texjazz-assignpoints**}→ allemand.

3.4   Options additionnelles des environnements

La rédaction d'exercice peut parfois s'avérer fastidieuse, sur le fond comme sur la forme. Aussi, afin de se constituer un vivier de problèmes à résoudre et de questionnaires à choix multiples à remplir ou à partager avec des collègues, il est pratique de les dissocier du document principal en les enregistrant par eux-mêmes dans un répertoire approprié.

\begin{**exercise**}[⟨*key-value options*⟩]

\begin{**quiz**}[⟨*key-value options*⟩]

storing = <u>true</u>|false   Par défaut : true

L'extension **askreply** inclut l'option storing=true/false qui, par défaut est activée. Deux répertoires sont automatiquement créés : « Exercises-<jobname> » et « Quizzes-<jobname> » pour accueillir d'une part, les exercices et leurs solutions et, d'autre part, les questionnaires à choix multiples.

Les enregistrements comportent deux types de fichiers, ceux intitulés <jobname>-<environment>-body-<no>.ltx et ceux nommés <jobname>-<environment>-<nb>.env. Les premiers représentent le code LATEX du corps de l'environnement concerné et les seconds sont constitués de l'ensemble de l'environnement — le corps de l'environnement est inséré dans l'environnement begin{env}...end{env} — et sont prêts à être incorporés dans un autre document.

display = <u>true</u>|false   Par défaut : true

Dans la même veine que l'enregistrement, on peut aller piocher dans une collection d'exercices ou de quiz déjà saisis, mais ne pas vouloir immédiatement les dévoiler dans un document. L'option display=true/false est là pour ce faire. Elle permet la saisie d'exercice, quiz ou solution pour préparer un document final en différant leur affichage.

title = ⟨*optional title*⟩   (initialement vide)

Comme précédemment évoqué, les environnements d'exercices et de quiz peuvent comporter un titre de manière optionnelle.

before skip = ⟨*length*⟩   Par défaut : 6pt
after skip = ⟨*length*⟩   Par défaut : 6pt

Enfin, deux autres options permettent de contrôler les espaces verticales, juste avant et juste après un environnement d'exercice, de quiz ou de solution, à savoir : before skip=⟨*length*⟩ et after skip=⟨*length*⟩. Par souci d'harmonie et de simplicité, les noms des clefs sont repris de la syntaxe de l'extension **tcolorbox**.

Le traitement des environnements de solution diffère un peu. Les options d'enregistrement (storing) et d'affichage (display) restent identiques, mais bénéficient d'un champ additionnel relatif à son numéro d'identification.

\begin{**solution**}[⟨*key-value options*⟩]

`ID = `⟨*exercise number*⟩ \hfill (initialement vide)

Comme déjà mentionné au §3.1, si il y a une discontinuité entre les énoncés d'exercices et leur solution, il faut indiquer explicitement à quel exercice correspond la solution. Sinon, la numérotation s'incrémente d'une unité par rapport à la dernière solution. C'est aussi le cas après avoir « réinitialisé » les solutions.

4   Copyright et licence

Copyright © 2020-2021 ejazz.

This work is part of the TEXjazz bundle and may be distributed and/or modified under the conditions of the LaTeX Project Public License, either version 1.3 of this license or (at your option) any later version. The latest version of this license is available at `http://www.latex-project.org/lppl.txt` and version 1.3 or later is part of all distributions of LaTeX version 2005/12/01 or later.

This work has the LPPL maintenance status 'maintained'.

The Current Maintainer of this work is ejazz.

This work consists of the files:

<center>'`askreply.sty`' and '`askreply[-fr].tex`'</center>

5   Historique des versions

2021/02/12 — v0.1h
　　　　Updating French documentation package and harmonizing the release of TEXjazz bundle.
2021/01/14 — v0.1g
　　　　Updating package and French documentation class (new "known bug" and "version changes" sections with 'xltabular' package).
2021/01/12 — v0.1f
　　　　Cleaning up the source code and updating the French documentation (new TEXjazz documentation class).
2021/01/08 — v0.1e
　　　　Bug layout correction (introducing a test about number of lines in the environment, but space control with empty contents remains buggy) and updating French documentation.
2021/01/02 — v0.1d
　　　　Cleaning up the source code and updating French documentation.
2021/01/01 — v0.1c
　　　　New French documentation.
2020/12/08 — v0.1b
　　　　Cleaning up the source code.
2020/03/20 — v0.1a

First release based on 'tcolorbox' package and PGF/TikZ layers. It has been thought as a companion package to '**assignpoints**' package and propose efficient quiz layout by mean of OCG/OCMG.

6   Commentaires circonstanciés (pour mémoire)

In order to solve issues in the writing of this LaTeX package, some snippets of code have been searched and borrowed to advanced users answers [e] on the TeX.SX Website. The different possible approaches and references are given in this section as a reminder.

6.1   Capturing system commands

The aim is to create new directories for storing exercises, solutions and quizzes. To interact with system commands (shell/bash under Unices), one must use the "shell-escape option" for LaTeX to be able to create the directories if not already present. For this task, the Enrico Gregorio's proposal is used, see:

https://tex.stackexchange.com/questions/16790/[...]

[...]write18-capturing-shell-script-output-as-command-variable/

Note that this snippet is taken "as is", because the package author is not yet comfortable with LaTeX3 syntax. It is also the case for some other snippets given in the sections below.

With respect to 'ifplatform' package to detect the operating system, the presence of these directories is tested and recorded in a command. According to this variable status, the directories are created or not.

```
\ExplSyntaxOn
\NewDocumentCommand{\captureshell}{ s o m }
 {
  \askreply_captureshell:Ne \l__askreply_captureshell_out_tl { #3 }
  \IfBooleanT { #1 }
   {% we may need to stringify the result
    \tl_set:Nx \l__askreply_captureshell_out_tl
     { \tl_to_str:N \l__askreply_captureshell_out_tl }
   }
  \IfNoValueTF { #2 }
   {
    \tl_use:N \l__askreply_captureshell_out_tl
   }
   {
    \tl_set_eq:NN #2 \l__askreply_captureshell_out_tl
   }
 }
\tl_new:N \l__askreply_captureshell_out_tl
```

e. The author of this package is a beginner in LaTeX packages writing and still not aware with all the subtleties of the internals.

```
\cs_new_protected:Nn \askreply_captureshell:Nn
 {
  \sys_get_shell:nnN { #2 } { } #1
  \tl_trim_spaces:N #1 % remove leading and trailing spaces
 }
\cs_generate_variant:Nn \askreply_captureshell:Nn { Ne }
\ExplSyntaxOff
\iflinux
  \typeout{*** The Operating System is a \linuxname\space box ***}
  \captureshell*[\dirstatus]{[ -d ./Exercises-\jobname/ ] && echo 'Existing' || echo 'Missing'}
  \ifdefstring{\dirstatus}{Existing}%
    {\typeout{*** \string`\jobname.tex' *** Directory `Exercises-\jobname' already exists.}}%
    {\ShellEscape{mkdir Exercises-\jobname}
      \typeout{*** \string`\jobname.tex' *** Directory `Exercises-\jobname' has been created.}}
  \captureshell*[\dirstatus]{[ -d ./Quizzes-\jobname/ ] && echo 'Existing' || echo 'Missing'}
  \ifdefstring{\dirstatus}{Existing}%
    {\typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' already exists.}}%
    {\ShellEscape{mkdir Quizzes-\jobname}
      \typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' has been created.}}
\fi

\newcommand{\exercisesdir}{Exercises-\jobname/}
\newcommand{\quizzesdir}{Quizzes-\jobname/}
```

6.2   Verbatim file/environment with options

After creating directories, it is time to store the exercises/solutions and quizzes. All these files are verbatim copies of each environments (with of course also their "subenvironments"). Because this package store both the LaTeX core of the environments (.lxt extension) and each independent files (.env extension), we need to have verbatim copies of the environments. The first one (.ltx) to display the environment in the document, and the second one to store (.env) all environments for futher treament (copying, transfering, etc.).

Based on the 'fancyberb' package two types of files are defined, firstly by mean of a new verbatim environment, and secondly by adding the begining and ending syntax for each environment with the help of the 'catchfile' package. See:
https://tex.stackexchange.com/questions/219996/[...]

[...]writing-environments-out-to-files-and-prepending-appending-additional-code

The issue here comes from the fact that the tradional way of managing key-value options ('keyval', 'pgfkeys', ect.) with verbatim contents can't be solved without a workaround if one wants to pass optional arguments ; optional arguments are considered as verbatim inputs and LaTeX clashes. The exercise environment is taken as an exemple, but in principle, are also applied to quiz and solution. The actual problem and its solution are given by the first link below. For the record, several other links are proposed about the subjet. See:

- https://tex.stackexchange.com/questions/9035/[...]
    [...]how-to-pass-an-optional-argument-to-an-environment-with-verbatim-content
- https://tex.stackexchange.com/questions/486148/[...]
    [...]avoid-passing-an-empty-optional-argument-an-environment-with-verbatim-content
- https://tex.stackexchange.com/questions/109030/optional-arguments-in-verbatim-environments
- https://tex.stackexchange.com/questions/108897/[...]
    [...]verbatim-like-environment-with-optional-arguments-poorly-behaved
- https://tex.stackexchange.com/questions/527895/[...]
    [...]environment-with-optional-argument-based-on-verbatim-causes-strange-error
- https://tex.stackexchange.com/questions/487828/[...]
    [...]what-is-the-maximum-limit-of-elements-in-a-list-expl3-xparse
- https://tex.stackexchange.com/questions/20957/[...]
    [...]how-to-use-a-write-command-inside-a-newenvironment
- https://tex.stackexchange.com/questions/113906/[...]
    [...]format-a-verbatim-paragraph

One has to change catcodes at the begining of the environment and paid attention to report the actual begining of the environment after options treatments. See explanations of @T.H and Hendrik Vogt in this link on TeX.SX.

```
\NewDocumentEnvironment{exercise}{  }{% Changing the catcodes to read options (EOL ^M)
  \catcode`\^^M=\active
  \@ifnextchar[%
    {\catcode`\^^M=5 \exercise@start}
    {\catcode`\^^M=5 \exercise@start[]}
}{%
  \endVerbatimOut%
  ...
}
\def\exercise@start[#1]{% Actual beginning of the environment
  \pgfkeys{/askreply/.cd, #1}% Key-value options
  ...
  \def\askreply@outfilename{%
    \exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
  \VerbatimOut{\askreply@outfilename}%
}
```

6.3   Background TikZ layer through pages

Because nested 'tcolorboxes' are only breakable for the first level, even with the 'enforce breakable' option, one must find a different strategy. The subenvironments like subexercise, subsolution or quizquestion have to be breakable too. Thus the simplest way to achieve this goal is to consider the fisrt level boxes (exercise, solution and quiz) as a background for the other 'tcolorbox' boxes. This can be done by mean of PGF/TikZ drawing tool and the 'zref' extended system cross-referencing tool (in particular the `zref-abspos` module/package which gives

the absolute coordinates on the page). To solve the issue, the `tikzpagenodes` package is also of practical use.

The effective way of doing is inspired by a Martin Scharrer's non offical package named 'tikzpagelayer', which is no more available (see source code and the links below):

▶ https://tex.stackexchange.com/questions/377161/[...]
     [...]the-current-state-of-the-art-tikz-underliner/
▶ https://tex.stackexchange.com/questions/334528/[...]
     [...]how-to-neatly-correctly-underline-with-a-tikz-rectangle
▶ https://tex.stackexchange.com/questions/335232/stacking-lengths-and-pop-them-off

6.4 OCG/OCMG

6.5 Custom tooltips (margin/foreground)

6.6 Known bugs

2021/01/14 — v0.1g	Status	Priority
If there is a page break inside the `quizquestion` environment, the reset button and its function only reset the second page proposals.	FIX ME	Urgent
2021/01/14 — v0.1g	Status	Priority
An empty first line within an exercise or a solution leads to spurious vertical space (why?); For example beginning by a subexercise or a subsolution.Workaround: adding a short sentence solves the issue, but it is not satisfying.	FIX ME	Urgent

7 Implémentation

On one hand, the lines 1–69 have been omitted in the following code. They only repeat the license statement which has already been mentioned in section 4. On the over hand, the specific macros belonging to this package are highlighted in blue, both those for the user interface and for internal control sequences. Numbers, options, conditionals, lengths, counters, external package names and commands are left in black. TeX, LaTeX or programming packages commands (like 'etoolbox', 'xparse' or PGF/TikZ for graphic tools are in bold purple).

```
71  \NeedsTeXFormat{LaTeX2e}
72  \ProvidesPackage{texjazz-askreply}%
73    [2021/01/14 v0.1g - Managing exercises/quizzes and their solutions/answers]
74
75  %-- Loading necessary utilities
76  %-----------------------------
77
```

```
78  \RequirePackage{xparse}% LaTeX3 syntax parser for LaTeX2e to define advanced commands/environments
79  \RequirePackage{etoolbox}% Swiss knife!
80  \RequirePackage{pgfkeys}% Key-value options management
81
82  \RequirePackage{ifplatform}% Check operating system
83  \RequirePackage{shellesc}% Access system commands from LaTeX (--shell-escape option is needed)
84  \RequirePackage{calc}% Utilities to calculate and length measuring
85
86  \RequirePackage{catchfile}% Managing files in macros
87  \RequirePackage{fancyvrb}% Enhanced verbatim environments
88
89  \RequirePackage{xcolor}% Color settings for layout cosmetics
90  \RequirePackage{tikz}% Graphics amazing tool
91  \usetikzlibrary{backgrounds, calc, fpu, chains, fit, positioning, shapes, shadings}
92  \RequirePackage{atbegshi}% Hooks inserting for code executed before the page shipped out
93  \RequirePackage{zref-abspos}% Making positions on a page available (references)
94  \RequirePackage{tikzpagenodes}% Extended page nodes
95  \RequirePackage{tcolorbox}% Fancy efficient coloured boxes (loads needed TikZ libraries)
96  \tcbuselibrary{breakable, fitting, raster, skins, theorems, xparse, hooks}
97  \RequirePackage{fontawesome5}% Nice and useful symbols
98
99  \RequirePackage{pdfbase}[2017/03/16]% Companion package to ocgx2
100 \RequirePackage{ocgbase}% Companion package to ocgx2
101 \RequirePackage[tikz]{ocgx2}% Awesome package used for quizzes extended OCG/OCMD contents
102
103 \RequirePackage{marginnote}% Managing margin elements
104
105 %- Wrong page reference (correct number, but wrong link), it's normal, one must add \phantomsection:
106 %- https://tex.stackexchange.com/questions/49061/incorrect-target-of-label-link-produced-by-hyperref
107 %- https://tex.stackexchange.com/questions/88468/wrong-page-with-pageref-if-using-thmtools
108 \@ifpackageloaded{hyperref}{}{\RequirePackage{hyperref}}% Hyperref package is needed
109
110 %-- Options
111 %----------
112
113 \newbool{askreply@usefrenchlanguage}
114 \newbool{askreply@usegermanlanguage}
115
116 \DeclareOption{french}{%
117   \booltrue{askreply@usefrenchlanguage}%
118 }
119 \DeclareOption{german}{% German conventions seem to be close to French ones
120   \booltrue{askreply@usegermanlanguage}%
121 }
122
```

```latex
123 \DeclareOption*{%- This package does not have any other options
124   \PackageWarning{askreply}{Unknown option '\CurrentOption'}
125 }
126 \ProcessOptions\relax%
127
128 %-- Checking/creating storage directories for exercises/solutions and quizzes/answers
129 %-------------------------------------------------------------------------------
130
131 %- From: https://tex.stackexchange.com/questions/16790/[...]
132 %-          [...]write18-capturing-shell-script-output-as-command-variable/
133 \ExplSyntaxOn
134 \NewDocumentCommand{\captureshell}{ s o m }
135  {
136   \askreply_captureshell:Ne \l__askreply_captureshell_out_tl { #3 }
137   \IfBooleanT { #1 }
138    {% we may need to stringify the result
139     \tl_set:Nx \l__askreply_captureshell_out_tl
140      { \tl_to_str:N \l__askreply_captureshell_out_tl }
141    }
142   \IfNoValueTF { #2 }
143    {
144     \tl_use:N \l__askreply_captureshell_out_tl
145    }
146    {
147     \tl_set_eq:NN #2 \l__askreply_captureshell_out_tl
148    }
149  }
150 \tl_new:N \l__askreply_captureshell_out_tl
151 \cs_new_protected:Nn \askreply_captureshell:Nn
152  {
153   \sys_get_shell:nnN { #2 } { } #1
154   \tl_trim_spaces:N #1 % remove leading and trailing spaces
155  }
156 \cs_generate_variant:Nn \askreply_captureshell:Nn { Ne }
157 \ExplSyntaxOff
158
159 \iflinux
160   \typeout{*** The Operating System is a \linuxname\space box ***}
161   \captureshell*[\dirstatus]{[ -d ./Exercises-\jobname/ ] && echo 'Existing' || echo 'Missing'}
162   \ifdefstring{\dirstatus}{Existing}%
163    {\typeout{*** \string`\jobname.tex' *** Directory `Exercises-\jobname' already exists.}}%
164    {\ShellEscape{mkdir Exercises-\jobname}
165     \typeout{*** \string`\jobname.tex' *** Directory `Exercises-\jobname' has been created.}}
166   \captureshell*[\dirstatus]{[ -d ./Quizzes-\jobname/ ] && echo 'Existing' || echo 'Missing'}
167   \ifdefstring{\dirstatus}{Existing}%
```

```latex
168      {\typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' already exists.}}%
169      {\ShellEscape{mkdir Quizzes-\jobname}
170        \typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' has been created.}}
171  %\captureshell*[\dirstatus]{[ -d ./Solutions-\jobname/ ] && echo 'Existing' || echo 'Missing'}
172  %\ifdefstring{\dirstatus}{Existing}%
173  %  {\message{*** \string`\jobname.tex' *** Directory `Solutions' already exists.}}%
174  %  {\ShellEscape{mkdir Solutions-\jobname}}
175  \fi
176  \ifmacosx
177    \typeout{*** The Operating System is a \macosxname\space box ***}
178    \captureshell*[\dirstatus]{[ -d ./Exercises-\jobname/ ] && echo 'Existing' || echo 'Missing'}
179    \ifdefstring{\dirstatus}{Existing}%
180      {\typeout{*** \string`\jobname.tex' *** Directory `Exercises-\jobname' already exists.}}%
181      {\ShellEscape{mkdir Exercises-\jobname}
182        \typeout{*** \string`\jobname.tex' *** Directory `Exercises-\jobname' has been created.}}
183    \captureshell*[\dirstatus]{[ -d ./Quizzes-\jobname/ ] && echo 'Existing' || echo 'Missing'}
184    \ifdefstring{\dirstatus}{Existing}%
185      {\typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' already exists.}}%
186      {\ShellEscape{mkdir Quizzes-\jobname}
187        \typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' has been created.}}
188  \fi
189  \ifwindows
190    \message{*** The Operating System is \windowsname\space ***}
191    % To be continued... But how? We don't know Windows commands. Is the following correct?
192    \captureshell*[\dirstatus]{IF exist Exercises-\jobname (echo Existing) ELSE (echo Missing)}
193    \ifdefstring{\dirstatus}{Existing}%
194      {\typeout{*** \string`\jobname.tex' *** Directory `Exercises-\jobname' already exists.}}%
195      {\ShellEscape{mkdir Exercises-\jobname}
196        \typeout{*** \string`\jobname.tex' *** Directory `Exercises-\jobname' has been created.}}
197    \captureshell*[\dirstatus]{IF exist Quizzes-\jobname (echo Existing) ELSE (echo Missing)}
198    \ifdefstring{\dirstatus}{Existing}%
199      {\typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' already exists.}}%
200      {\ShellEscape{mkdir Exercises-\jobname}
201        \typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' has been created.}}
202  \fi
203
204  \newcommand{\exercisesdir}{Exercises-\jobname/}
205  \newcommand{\quizzesdir}{Quizzes-\jobname/}
206
207  %-- Setting lengths, colors, commands and macros
208  %-------------------------------------------
209
210  %- If \lightbf is defined OK (e.g. medium bold or regular if light font), else \textbf{}
211  \ifcsdef{lightbf}{}{\let\lightbf\textbf}
212
```

```latex
213  %- Colors definitions
214  \definecolor{askreplycolorenvbackground}{gray}{0.95}
215  \definecolor{askreplydarkelectricblue}{RGB}{83, 104, 120}% HTML: #536878 - CMYK: 31, 13, 0, 53
216  \definecolor{askreplyredbrown}{RGB}{153, 25, 25}% #991919ff
217  \definecolor{askreplyteal}{RGB}{0, 128, 128}% medium-satured blue-green
218  \definecolor{askreplybuttongray}{RGB}{200, 200, 200}
219  \colorlet{askreplyfirstcolor}{askreplydarkelectricblue}
220  \colorlet{askreplysecondcolor}{askreplyredbrown}
221  \colorlet{askreplythirdcolor}{askreplyteal}
222
223  %- Boxes standard lengths
224  \newlength{\askreplyboxmargins}
225  \setlength{\askreplyboxmargins}{8pt}%24pt
226  \newlength{\askreplyboxvsep}
227  \setlength{\askreplyboxvsep}{6pt}
228  \newlength{\askreplyboxvskip}
229  \setlength{\askreplyboxvskip}{4pt}
230  \newlength{\askreplyboxrule}
231  \setlength{\askreplyboxrule}{0.6pt}
232  \newlength{\askreplyboxarc}
233  \setlength{\askreplyboxarc}{4pt}
234  \newlength{\askreplyshadingradius}
235  \setlength{\askreplyshadingradius}{1.8\baselineskip}
236
237  \newlength{\askreplyparindent}% Because sometimes using \parindent is not effective: WHY?
238  %\setlength{\askreplyparindent}{\parindent}
239  \setlength{\askreplyparindent}{0pt}
240
241  %\newcommand{\tcbphantom}{\vspace*{\dimexpr-\baselineskip-\dp\strutbox\relax}\vphantom{Hg}}
242  \newcommand{\tcbphantom}{\vspace*{-\dp\strutbox}\vphantom{Hg}}
243
244  %- Configuring itemize and enumerate lists (vertical and horizontal skips)
245  \newlength\askreplyitemlabelwidth
246  \newlength\askreplyitemindent
247
248  \ifbool{askreply@usefrenchlanguage}{% Adapted from French-Babel
249    \newcommand*{\askreplyitemlabel}{\textemdash}  % ou \textendash (tiret plus court)
250    \settowidth{\askreplyitemlabelwidth}{\askreplyitemlabel}
251    \setlength{\askreplyitemindent}{\parindent}
252    %\addtolength{\askreplyitemindent}{\askreplyitemlabelwidth}
253    %\addtolength{\askreplyitemindent}{\labelsep}
254  }{
255    \newcommand*{\askreplyitemlabel}{\tiny\normalfont\faCircle}
256    \settowidth{\askreplyitemlabelwidth}{\askreplyitemlabel}
257    \setlength{\askreplyitemindent}{\parindent}
```

```latex
258    \addtolength{\askreplyitemindent}{\askreplyitemlabelwidth}
259    \addtolength{\askreplyitemindent}{\labelsep}
260 }
261
262 %- For an unknown reason, we failed to configure list environments with the `enumitem' package
263 %- inside the TikZ box (issue with \hsize/\linewidth?). A workaround is to put the list environment
264 %- into a tcolorbox (see below exercise/quiz def.) or a minipage (avoid "minipage" environment:
265 %- it is not breakable!). Breakable lists are fine inside a TikZ box, but take care that they are
266 %- not breakable inside a "tcolorbox" (here subexercise, and so on...)
267 %- For the moment being, we leave `enumitem' package and only set the things for French.
268
269 %-- Customising exercise/quiz name (easily overwritten or deleted by main class or other packages)
270 %------------------------------------------------------------------------------------------------
271
272 \ifbool{askreply@usefrenchlanguage}{%
273    \providecommand{\exercisename}{Exercice}
274    \providecommand{\exercisenamenocap}{exercice}
275    %\providecommand{\quizname}{Quiz}
276    \providecommand{\quizname}{Questionnaire}% Maybe better, but Quiz is now current, mostly with MCQ
277    \providecommand{\solutionname}{Solution}
278    \providecommand{\listexercisename}{Liste des exercices}
279    \providecommand{\listquizname}{Liste des questionnaires}
280    \newcommand*{\quizverifyname}{Vérifier}
281    \newcommand*{\quizresetname}{Réinitialiser}
282    \newcommand*{\quizselectname}{Tout sélectionner}
283    \newcommand*{\quizshowanswername}{Afficher la réponse}
284    \newcommand*{\quizhideanswername}{Masquer la réponse}
285    \newcommand*{\quizrecordname}{Enregistrer}
286    \newcommand*{\quizexplanationname}{Explications}
287    \newcommand*{\quiztrialnumbername}{Nombre d'essai : }
288 }{%
289    \ifbool{askreply@usegermanlanguage}{%
290       \providecommand{\exercisename}{Ausübung}% Correct?
291       \providecommand{\exercisenamenocap}{Ausübung}
292       \providecommand{\quizname}{Quiz}% Correct?
293       \providecommand{\solutionname}{Lösung}% Correct?
294       \providecommand{\listexercisename}{List of Exercises}
295       \providecommand{\listquizname}{List of Quizzes}
296       \newcommand*{\quizverifyname}{Verify}
297       \newcommand*{\quizresetname}{Reset}
298       \newcommand*{\quizselectname}{Select all}
299       \newcommand*{\quizshowanswername}{Show answer}
300       \newcommand*{\quizhideanswername}{Hide answer}
301       \newcommand*{\quizrecordname}{Record}
302       \newcommand*{\quizexplanationname}{Explanations}
```

```latex
303      \newcommand*{\quiztrialnumbername}{Number of trial: }
304    }{%
305      \providecommand{\exercisename}{Exercise}
306      \providecommand{\exercisenamenocap}{exercise}
307      \providecommand{\quizname}{Quiz}
308      \providecommand{\solutionname}{Solution}
309      \providecommand{\listexercisename}{List of Exercises}
310      \providecommand{\listquizname}{List of Quizzes}
311      \newcommand*{\quizverifyname}{Verify}
312      \newcommand*{\quizresetname}{Reset}
313      \newcommand*{\quizselectname}{Select all}
314      \newcommand*{\quizshowanswername}{Show answer}
315      \newcommand*{\quizhideanswername}{Hide answer}
316      \newcommand*{\quizrecordname}{Record}
317      \newcommand*{\quizexplanationname}{Explanations}
318      \newcommand*{\quiztrialnumbername}{Number of trial: }
319    }%
320 }
321
322 %-- File writing management (as "verbatim.sty" way of doing)
323 %----------------------------------------------------------
324
325 %- Defining verbatim way to store contents in a file (stolen to `tcolorbox' package)
326 \newwrite\askreply@out% Not in the commands below to avoid "No room for a new \write" error!!!
327
328 %- From tcolorbox package
329 \def\askreplyverbatimwrite#1{%
330   \@bsphack
331   \immediate\openout\askreply@out #1
332   \let\do\@makeother\dospecials
333   \catcode`\^^M\active \catcode`\^^I=12
334   \def\verbatim@processline{%
335     \immediate\write\askreply@out
336       {\the\verbatim@line}}%
337   \verbatim@start}%
338
339 \def\endaskreplyverbatimwrite{%
340   \immediate\closeout\askreply@out
341   \@esphack%
342 }
343
344 %- From: https://tex.stackexchange.com/questions/219996/[...]
345 %-         [...]writing-environments-out-to-files-and-prepending-appending-additional-code/
346 \def\askreplyverbatimpreapp{\FV@Environment{}{askreplyverbatimpreapp}}
347
```

```latex
348  %- Write #2 before and #3 after environment contents
349  \def\FVB@askreplyverbatimpreapp#1#2#3{%
350    \@bsphack
351    \begingroup
352      \FV@UseKeyValues
353      \FV@DefineWhiteSpace
354      \def\FV@Space{\space}%
355      \FV@DefineTabOut
356      \def\FV@ProcessLine{\immediate\write\FV@OutFile}%
357      \immediate\openout\FV@OutFile #1\relax
358      % Added next 2 lines
359      \immediate\write\FV@OutFile{#2}%
360      \def\FV@appendline{#3}%
361      \let\FV@FontScanPrep\relax
362      \let\@noligs\relax
363      \FV@Scan}
364
365  \def\FVE@askreplyverbatimpreapp{%
366    % Added next line
367    \immediate\write\FV@OutFile{\FV@appendline}%
368    \immediate\closeout\FV@OutFile\endgroup\@esphack}
369
370  \DefineVerbatimEnvironment{askreplyverbatimpreapp}{askreplyverbatimpreapp}{}
371
372  \NewDocumentCommand{\askreply@filecopytoenv}{ m m m m G{} }{%
373    %- Usage - #1 = <src-file>, #2 = <target-file>,
374    %-        #3 = <prepend-stuff>, #4 = <append-stuff>, #5 = [<env-options>]
375    %- Reset the target file to empty (not to add the things twice),
376    %- then process the modifications
377    \IfFileExists{#2}%
378      {\CatchFileDef{\askreply@targetcontent}{#2}{}\let\askreply@targetcontent\empty}{}%
379    \begingroup
380    \IfFileExists{#1}%
381      {\CatchFileDef{\askreply@filecontent}{#1}{%
382        % Keep existing end-of-lines (Original)
383        %\catcode`\|=12 |endlinechar=`^^J\catcode\endlinechar=12\relax
384        \let\do\@makeother\dospecials% Stuff from verbatim.sty and alike
385        \catcode`\^^L\active%  What this corresponds to? Line feed?
386        \catcode`\^^I=\active% keep tabs? YES!
387        \catcode`\ =\active% keep spaces? YES!
388        \catcode`\^^M\active% keep end of line? YES
389      }%
390      }%
391      {\let\askreply@filecontent\empty}%
392    \immediate\openout\askreply@out=#2\relax
```

```
393    % \newlinechar`^^J seems to be LaTeX native end of line
394    % (and ^^M the one of external files? TODO: clarify this!)
395    \ifstrempty{#5}%
396      {\immediate\write\askreply@out{#3^^J\detokenize\expandafter{\askreply@filecontent}#4}}%
397      {\immediate\write\askreply@out{#3#5^^J\detokenize\expandafter{\askreply@filecontent}#4}}%
398    \immediate\closeout\askreply@out
399    \endgroup
400  }
401
402  %-- Defining styles for TikZ and `tcolorbox` boxes
403  %------------------------------------------------
404
405  %- Defining styles for the "first layer" box (TikZ)
406  \tikzset{%
407    askreplyframedbox/.style={%
408      on background layer,
409      draw=askreplyfirstcolor,
410      line width=\askreplyboxrule,
411      fill=askreplycolorenvbackground,
412      rounded corners=\askreplyboxarc,
413    },%
414    askreplyframedtitlebox/.style={%
415      on background layer,
416      fill=askreplyfirstcolor!75!black,
417      rounded corners=\askreplyboxarc,
418    },
419  }
420
421  \tcbset{askreplybackstageboxtitle/.style={%
422    enhanced,
423    notitle,
424    colback=askreplyfirstcolor!75!black,
425    colframe=askreplyfirstcolor,
426    colupper=white,
427    %fontupper=\normalsize\scshape,
428    arc=\askreplyboxarc,
429    boxsep=2pt, boxrule=0.4pt,
430    left=4pt, right=4pt, top=1.75pt, bottom=1.75pt,
431    sharp corners=south,
432    overlay={%
433    %\node[xshift=(-0.5\envsymbolwidth-4pt)]
434    %  at (frame.west) {\textcolor{askreplysecondcolor}{\normalfont\large\envsymbol}};
435    \node[xshift=-10pt] at (frame.west) {% 10pt = 0.5*16pt + 2pt
436      \textcolor{askreplysecondcolor}{\makebox[16pt][c]{\normalfont\large\envsymbol}}};
437    \askreply@level@display% Defined below just before the environments definition
```

```
438      },
439    before={\par\pagebreak[0]\parindent=0pt},%\parindent=0pt
440    after={\par\vspace*{-2\askreplyboxrule}},
441    }
442 }
443
444 %- Defining styles for the "second layer" (breakabke) boxes: with and without points assignment
445 \tcbset{subexercisepoints/.style={%
446    enhanced,
447    breakable,
448    colback=black!3,
449    colframe=black!30,
450    coltitle=white,%fonttitle=\itshape\scshape,
451    title style={left color=black!65, right color=askreplyfirstcolor!75!black,
452                 middle color=askreplyfirstcolor!30!black!75},
453    toptitle=1.0pt, bottomtitle=1.0pt,
454    fontupper=\normalfont,
455    arc=0.5\askreplyboxarc,
456    boxsep=2pt, boxrule=0.4pt,
457    left=4pt, right=4pt, top=4pt, bottom=4pt,
458    title={% Empty versus non-empty subexercise title
459      \iftoggle{assignpoints@checkemptystring}%
460        {\strut\textsf{\textit{\textsc{\lightbf{%
461         \exercisename~\currentexercisenumber.\currentsubexercisenumber}}}}}%
462        {\strut\textsf{\textit{\textsc{\lightbf{%
463         \exercisename~\currentexercisenumber.\currentsubexercisenumber}}}}%
464         \ifbool{askreply@usefrenchlanguage}%
465           {\textsf{\textsc{\textit{\lightbf{%
466            \enspace\textemdash\enspace\currentsubexercisetitle}}}}}%
467           {\textsf{\textsc{\textit{\lightbf{%
468            \enspace\textendash\enspace\currentsubexercisetitle}}}}}%
469         }%
470        ~\dotfill~\textsf{\textsc{\textit{\lightbf{\footnotesize%
471           \displaypoints*[exercise]{\currentexercisenumber.\currentsubexercisenumber}}}}}%
472      },
473    before={\par\pagebreak[0]\vspace{4pt}},% No indent because title box
474    after=\par\vspace{2pt},
475    }
476 }
477
478 \tcbset{subsolutionpoints/.style={%
479    enhanced,
480    breakable,
481    colback=black!3, colframe=black!30,
482    coltitle=white, %fonttitle=\itshape\scshape,
```

```
483    title style={left color=black!65, right color=askreplysecondcolor!75!black,
484              middle color=askreplysecondcolor!30!black!75},
485    toptitle=1.0pt, bottomtitle=1.0pt,
486    fontupper=\normalfont,
487    arc=0.5\askreplyboxarc,
488    boxsep=2pt, boxrule=0.4pt,
489    left=4pt, right=4pt, top=4pt, bottom=4pt,
490    title={% Empty versus non-empty subexercise title
491      \iftoggle{assignpoints@checkemptystring}%
492        {\strut\textsf{\textit{\textsc{\lightbf{%
493          \solutionname~\theassignpoints@solutioncount.\theassignpoints@subsolutioncount}}}}}%
494        {\strut\textsf{\textit{\textsc{\lightbf{%
495          \solutionname~\theassignpoints@solutioncount.\theassignpoints@subsolutioncount}}}}}%
496          \ifbool{askreply@usefrenchlanguage}%
497            {\textsf{\textsc{\textit{\lightbf{%
498              \enspace\textemdash\enspace\currentsubexercisetitle}}}}}%
499            {\textsf{\textsc{\textit{\lightbf{%
500              \enspace\textendash\enspace\currentsubexercisetitle}}}}}%
501        }%
502        ~\dotfill~\textsf{\textsc{\textit{\lightbf{\footnotesize%
503          \displaypoints*[exercise]{%
504            \theassignpoints@solutioncount.\theassignpoints@subsolutioncount}}}}}%
505      },
506    before={\par\pagebreak[0]\vspace{4pt}},%\parindent=0pt
507    %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
508    after=\par\vspace{2pt},
509    }
510 }
511
512 \tcbset{subexercisenopoint/.style={%
513    enhanced,
514    breakable,
515    colback=black!3,
516    colframe=black!30,
517    coltitle=white, %fonttitle=\itshape\scshape,
518    title style={left color=black!65, right color=askreplyfirstcolor!75!black,
519              middle color=askreplyfirstcolor!30!black!75},
520    toptitle=1.0pt, bottomtitle=1.0pt,
521    fontupper=\normalfont,
522    arc=0.5\askreplyboxarc,
523    boxsep=2pt, boxrule=0.4pt,
524    left=4pt, right=4pt, top=4pt, bottom=4pt,
525    title={% Empty versus non-empty subexercise title
526      \ifdefempty{\currentsubexercisetitle}%
527        {\strut\textsf{\textit{\textsc{\lightbf{\exercisename~\theexercise.\thesubexercise}}}}}%
```

```latex
528        {\strut\textsf{\textit{\textsc{\lightbf{\exercisename~\theexercise.\thesubexercise}}}}}%
529          \ifbool{askreply@usefrenchlanguage}%
530            {\textsf{\textsc{\textit{\lightbf{%
531              \enspace\textemdash\enspace\currentsubexercisetitle}}}}}%
532            {\textsf{\textsc{\textit{\lightbf{%
533              \enspace\textendash\enspace\currentsubexercisetitle}}}}}%
534        }%
535      },
536    before={\par\pagebreak[0]\vspace{4pt}},%\parindent=0pt
537    %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
538    after=\tcbphantom\par\vspace*{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
539    %after=\par,% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
540    }
541 }
542
543 \tcbset{subsolutionnopoint/.style={%
544    enhanced,
545    breakable,
546    colback=black!3, colframe=black!30,
547    %colbacktitle=black!65,
548    coltitle=white, %fonttitle=\itshape\scshape,
549    title style={left color=black!65, right color=askreplysecondcolor!75!black,
550                 middle color=askreplysecondcolor!30!black!75},
551    toptitle=1.0pt, bottomtitle=1.0pt,
552    %fontupper=\normalfont,
553    arc=0.5\askreplyboxarc,
554    boxsep=2pt, boxrule=0.4pt,
555    top=4pt, bottom=4pt,
556    left=4pt, right=4pt,
557    title={% Empty versus non-empty subexercise title
558      \ifdefempty{\currentsubexercisetitle}%
559        {\strut\textsf{\textit{\textsc{\lightbf{\solutionname~\thesolution.\thesubsolution}}}}}%
560        {\strut\textsf{\textit{\textsc{\lightbf{\solutionname~\thesolution.\thesubsolution}}}}%
561          \ifbool{askreply@usefrenchlanguage}%
562            {\textsf{\textit{\textsc{\lightbf{%
563              \enspace\textemdash\enspace\currentsubexercisetitle}}}}}%
564            {\textsf{\textit{\textsc{\lightbf{%
565              \enspace\textendash\enspace\currentsubexercisetitle}}}}}%
566        }%
567      },
568    before={\par\pagebreak[0]\vspace{4pt}},%\parindent=0pt
569    %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
570    %after=\tcbphantom\par\vspace*{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
571    after=\par\vspace{2pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
572    }
```

```latex
573 }
574
575 %-- Defining quizzes specific styles
576 %----------------------------------
577
578 \tikzset{%
579   quizbutton/.style={
580     shape=rectangle, rounded corners=1pt,
581     text=black, draw=#1!90,
582     top color=#1!15!white, bottom color=#1!75,
583     inner xsep=6pt, inner ysep=2pt,
584   },
585 }
586
587 \tcbset{
588   quizquestionpoints/.style={
589     enhanced jigsaw,
590     breakable,% doc. p.377: A tcolorbox inside a tcolorbox is automatically set to be unbreakable
591     %enforce breakable,% If one really wants the inner box to be breakable, use enforce breakable
592     lowerbox=ignored,
593     colframe=black!30,
594     colback=black!2!white,
595     coltitle=askreplyfirstcolor,
596     %fonttitle={\scshape\fontsize{9pt}{10.8pt}\selectfont\titlingspacedfont},
597     fonttitle={\normalfont\itshape\scshape\strut},
598     attach title to upper={\par\vspace{2pt}},
599     toptitle=0.0pt, bottomtitle=0.0pt,
600     fontupper=\normalfont\small,
601     title={% Empty versus non-empty subexercise title
602       \iftoggle{assignpoints@checkemptystring}%
603         {\textsf{\lightbf{\normalsize\quizname~\currentquiznumber.\currentquizquestionnumber}}}%
604         {\textsf{\lightbf{\normalsize\quizname~\currentquiznumber.\currentquizquestionnumber}}%
605           \textsf{\lightbf{\normalsize\enspace\textemdash\enspace\currentquizquestiontitle}}%
606           ~\dotfill~\textsf{\lightbf{\footnotesize\scshape%
607             \displaypoints*[quiz]{\currentquiznumber.\currentquizquestionnumber}}}%
608       }%
609     },
610     %overlay={%
611     %   \node[xshift=.5\marginparsep, yshift=-.5\baselineskip, anchor=west] at (frame.north east)
612     %     {\footnotesize\quiztrialnumbername\themcqtrialnumber};
613     %   },
614     opacityback=0.0,
615     %opacityfill=0.4,
616     boxsep=0pt, boxrule=0.4pt,
617     arc=0.5\askreplyboxarc,
```

```latex
      left=6pt, right=6pt,
      top = 4pt, bottom = 4pt,% default=2mm
      width=\linewidth,
      %before skip=4pt, after skip=4pt,
      before={\par\pagebreak[0]\vspace{0pt}},%\parindent=0pt
      %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
      %after=\tcbphantom\par\vspace*{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
      after=\par\vspace{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
    },
}

\tcbset{
  quizquestionnopoint/.style={
    enhanced jigsaw,
    breakable,% doc. p.377: A tcolorbox inside a tcolorbox is automatically set to be unbreakable
    %enforce breakable,% If one really wants the inner box to be breakable, use enforce breakable
    lowerbox=ignored,
    colframe=black!30,
    colback=black!2!white,
    coltitle=askreplyfirstcolor,
    %fonttitle={\scshape\fontsize{9pt}{10.8pt}\selectfont\titlingspacedfont},
    fonttitle={\normalfont\itshape\scshape\strut},
    attach title to upper={\par\vspace{2pt}},
    toptitle=0.0pt, bottomtitle=0.0pt,
    fontupper=\normalfont\small,
    title={% Empty versus non-empty quizquestion title
      \ifdefempty{\currentquizquestiontitle}%
        {\strut\textsf{\lightbf{\quizname~\thequizquestion}}}%
        {\strut\textsf{\lightbf{\quizname~\thequizquestion}}%
          \textsf{\lightbf{\enspace\textemdash\enspace\currentquizquestiontitle}}}%
        }%
      },
    opacityback=0.0,
    %opacityfill=0.4,
    boxsep=0pt, boxrule=0.4pt,
    arc=0.5\askreplyboxarc,
    left=6pt, right=6pt,
    top = 4pt, bottom = 4pt,% default=2mm
    width=\linewidth,
    %before skip=4pt, after skip=4pt,
    before={\par\pagebreak[0]\vspace{0pt}},%\parindent=0pt
    %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
    %after=\tcbphantom\par\vspace*{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
    after=\par\vspace{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
  },
```

```latex
663  }
664
665  \tcbset{
666    mcqdemo/.style={
667      enhanced jigsaw,
668      breakable,% doc. p.377: A tcolorbox inside a tcolorbox is automatically set to be unbreakable
669      %enforce breakable,% If one really wants the inner box to be breakable, use enforce breakable
670      lowerbox=ignored,
671      colframe=black!30,
672      colback=black!2!white,
673      coltitle=askreplyfirstcolor,
674      %fonttitle={\scshape\fontsize{9pt}{10.8pt}\selectfont\titlingspacedfont},
675      fonttitle={\normalfont\sffamily\itshape\scshape\strut},
676      attach title to upper={\par\vspace{2pt}},
677      toptitle=0.0pt, bottomtitle=0.0pt,
678      fontupper=\normalfont\small,
679      title={% Empty versus non-empty quizquestion title
680        \ifdefempty{\currentquizquestiontitle}%
681          {\strut\lightbf{\quizname~\thequizdemo.\themcqdemo}}%
682          {\strut\lightbf{\quizname~\@Alph{\thequizdemo}.\themcqdemo}%
683              \enspace\textemdash\enspace\lightbf{%
684                \currentquizquestiontitle~\dotfill}}%~{\small\displaypoints*[quiz]{\thequizdemo.\themcqdemo}}}%
685        }%
686        },
687      opacityback=0.0,
688      %opacityfill=0.4,
689      boxsep=0pt, boxrule=0.4pt,
690      arc=0.5\askreplyboxarc,
691      left=6pt, right=6pt,
692      top = 4pt, bottom = 4pt,% default=2mm
693      width=\linewidth,
694      %before skip=4pt, after skip=4pt,
695      before={\par\pagebreak[0]\vspace{0pt}},%\parindent=0pt
696      %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
697      %after=\tcbphantom\par\vspace*{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
698      after=\par\vspace{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
699    },
700  }
701
702  %-- Setting and tweaking useful macros from the unofficial `tikzpagelayer` package (Martin Scharrer)
703  %-------------------------------------------------------------------------------------------------
704
705  %- See: https://tex.stackexchange.com/questions/377161/[...]
706  %-         [...]how-to-neatly-correctly-underline-with-a-tikz-rectangle/
707  %-     https://tex.stackexchange.com/questions/334528/the-current-state-of-the-art-tikz-underliner/
```

```latex
708 %- Martin Scharrer's original code: https://bitbucket.org/martin_scharrer/tikzpagelayers (dead link)
709
710 \newcommand\tikzpagemark{}
711 \DeclareRobustCommand\tikzpagemark[1]{%
712   \leavevmode
713   \zsavepos{tikzpagemarkpos-#1}%
714 }
715
716 \def\tpl@addto#1#2{%
717   \begingroup
718     \ifx#1\@undefined
719       \global\let#1\empty
720     \else
721       \ifx#1\relax
722         \global\let#1\empty
723       \fi
724     \fi
725     \edef\@tempa{\@thetikzpagemark}%
726     \expandafter\g@addto@macro\expandafter#1\expandafter{%
727       \expandafter\set@tikzpagemark\expandafter{\@tempa}%
728         #2%
729     }%
730   \endgroup
731 }
732
733 \newenvironment{tikzpagelayer}[2][foreground]{%
734   \stepcounter{tikzpagemark}%
735   \tikzpagelayeron
736   \tikzpagemark{\@thetikzpagemark-begin}%
737   \expandafter\tpl@addto\csname tikzpagelayer@#1@page%
738     \zref@extract{tikzpagemarkpos-\@thetikzpagemark-begin}{abspage}\endcsname{#2}%
739   \edef\endtikzpagelayer{\noexpand\tikzpagemark{\@thetikzpagemark-end}}%
740 }{}%
741
742 \newcommand{\starttikzpagelayer}[3][foreground]{%
743   \begingroup
744     \tikzpagelayeron
745     \edef\@thetikzpagemark{@#2}%
746     \tikzpagemark{\@thetikzpagemark-begin}%
747     \expandafter\tpl@addto\csname tikzpagelayer@#1@page%
748       \zref@extract{tikzpagemarkpos-\@thetikzpagemark-begin}{abspage}\endcsname{#3}%
749   \endgroup
750 }
751
752 \newcommand{\stoptikzpagelayer}[1]{%
```

```
753    \tikzpagemark{@#1-end}%
754  }%
755
756  \def\set@tikzpagemark#1{%
757    \def\@thetikzpagemark{#1}%
758    \edef\tplfirstpage{\zref@extract{tikzpagemarkpos-#1-begin}{abspage}}%
759    \edef\tpllastpage{\zref@extract{tikzpagemarkpos-#1-end}{abspage}}%
760    \coordinate (tplbegin) at
761      ([shift={(\zposx{tikzpagemarkpos-#1-begin}sp,
762                \zposy{tikzpagemarkpos-#1-begin}sp)}]current page.south west);%
763    \coordinate (tplend) at
764      ([shift={(\zposx{tikzpagemarkpos-#1-end}sp,
765                \zposy{tikzpagemarkpos-#1-end}sp)}]current page.south west);%
766  }
767
768  \newcommand\tplonpage[2][foreground]{%
769    \begingroup
770      \pgfmathtruncatemacro\@tplpage{#2}%
771    \expandafter\endgroup
772    \expandafter\tpl@addto\csname tikzpagelayer@#1@page\@tplpage\endcsname
773  }
774
775  \newcommand\tplonnextpage[1][foreground]{%
776    \tplonpage[#1]{\@tplnextpage}%
777  }
778
779  \newcommand\tplonlastpage[1][foreground]{%
780    \tplonpage[#1]{\tpllastpage}%
781  }
782
783  \newcommand\tplonmiddlepages[2][foreground]{%
784    \begingroup
785      \@tempcnta=\tplfirstpage\relax
786      \loop
787      \advance\@tempcnta\@ne
788      \ifnum\@tempcnta<\tpllastpage
789        \tplonpage[#1]{\number\@tempcnta}{#2}%
790      \repeat
791    \endgroup
792  }
793
794  %- During the page `abspage' is one to low
795  \def\@tplnextpage{\c@abspage+2}
796
797  %- In the shipout routine it is correct
```

```latex
798  \def\@@tplnextpage{\c@abspage+1}
799
800  \newcounter{tikzpagemark}
801  \def\@thetikzpagemark{\number\c@tikzpagemark}
802
803  \def\@tikzpagelayeron{%
804    \AtBeginShipoutNext{\tikzpagelayer@atbeginshipout}%
805    \global\let\tikzpagelayeron\relax
806  }
807
808  \AtBeginShipout{\tikzpagelayer@atbeginshipout}%
809  \let\tikzpagelayeron\@tikzpagelayeron
810  \let\tikzpagelayer@background\empty
811  \let\tikzpagelayer@foreground\empty
812
813  \def\tikzpagelayer@atbeginshipout{%
814    \setbox\AtBeginShipoutBox\hbox{%
815      \color@setgroup
816      \let\@tplnextpage\@@tplnextpage
817      \begin{tikzpicture}[remember picture]%
818        \path[use as bounding box,every node/.style={},every rectangle node/.style={}]
819          node[inner sep=0pt,outer sep=0pt] (current page box) {\box\AtBeginShipoutBox};
820        %\fill[line width=10pt,blue,opacity=.5]
821        %  (current page box.north west) rectangle (current page box.south east);
822        \begin{pgfonlayer}{background}
823          \begin{scope}%
824            \csname tikzpagelayer@background@page\number\c@abspage\endcsname
825              \tikzpagelayer@background
826          \end{scope}%
827        \end{pgfonlayer}%
828        \begin{scope}%
829          \csname tikzpagelayer@foreground@page\number\c@abspage\endcsname
830          \tikzpagelayer@foreground
831        \end{scope}%
832      \end{tikzpicture}%
833      \color@endgroup
834    }%
835    \global\let\tikzpagelayer@background\empty
836    \global\let\tikzpagelayer@foreground\empty
837    \global\let\tikzpagelayeron\@tikzpagelayeron
838  }
839
840  \NewDocumentCommand{\@askreplytikzframebox}{ m m }{% Background box for exercises and solutions
841    \begin{scope}[#1]
842      \ifnum\tplfirstpage=\tpllastpage
```

```
843      %\node[circle, radius=2pt, fill=yellow]
844      %  at ([xshift={(-\askreplyboxmargins-\askreplyparindent+\askreplyboxrule)},
845      %       yshift={(\ht\strutbox+1.5\askreplyboxvskip+0.5\askreplyboxrule)}]tplbegin) {};
846      \path [#1] let
847        \p1 = (tplbegin),
848        \p2 = (tplend),
849        \p3 = (current page text area.north west),
850        \p4 = (current page text area.south east) in
851          (\x4-.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) --
852          (\x4-.5\pgflinewidth,\y2-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) --
853          (\x3+.5\pgflinewidth,
854           \y2-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) [rounded corners=false] --
855          (\x3+.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) -- cycle;
856      \begin{scope}
857        %- Starting with a shading and fading quarter of a circle
858        \node[save path=\shadingstartboxpath,
859              shape=circular sector,
860              rounded corners=false,
861              outer sep=0pt,
862              circular sector angle=90,
863              shape border uses incircle,
864              shape border rotate=135,%-225,%-135,%-45,%135,%45,
865              anchor=sector center,
866              minimum size=\askreplyshadingradius,
867              xshift={(-\askreplyboxmargins-\askreplyparindent+\askreplyboxrule)},
868              yshift={(\ht\strutbox+1.5\askreplyboxvskip+0.0\askreplyboxrule)},
869              ]
870          (shadingstartbox) at (tplbegin) {};
871        \clip[use path=\shadingstartboxpath];
872        \shade[inner color=#2, outer color=askreplycolorenvbackground] let %,path fading=fade in
873          \p1=($(shadingstartbox.arc center)-(shadingstartbox.sector center)$),
874          \n1={veclen(\y1,\x1)} in
875            (shadingstartbox.sector center) circle (\n1);
876      \end{scope}
877      %\begin{scope}
878      %  %- Ending with a solution reference (for exercise only, empty for solution)
879      %  \node[anchor=east, color=askreplysecondcolor] at (tplend)
880      %    {\itshape\footnotesize{\normalfont\faSquare}\enspace Solution};
881      %\end{scope}
882    \else
883      \path [#1] let
884        \p1 = (tplbegin),
885        \p3 = (current page text area.north west),
886        \p4 = (current page text area.south east) in
887          (\x3+.5\pgflinewidth,\y4-\dp\strutbox) [rounded corners=false] --
```

```
888            (\x3+.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) -|
889            (\x4-.5\pgflinewidth,\y4-\dp\strutbox);
890        \begin{scope}
891          %- Starting with a shading and fading quarter of a circle
892          \node[save path=\shadingstartboxpath,
893              shape=circular sector,
894              rounded corners=false,
895              outer sep=0pt,
896              circular sector angle=90,
897              shape border uses incircle,
898              shape border rotate=135,%-225,%-135,%-45,%135,%45,
899              anchor=sector center,
900              minimum size=\askreplyshadingradius,
901              xshift={(-\askreplyboxmargins-\askreplyparindent+\askreplyboxrule)},
902              yshift={(\ht\strutbox+1.5\askreplyboxvskip+0.0\askreplyboxrule)},
903              ]
904          (shadingstartbox) at (tplbegin) {};
905        \clip[use path=\shadingstartboxpath];
906        \shade[inner color=#2, outer color=askreplycolorenvbackground] let %,path fading=fade in
907          \p1=($(shadingstartbox.arc center)-(shadingstartbox.sector center)$),
908          \n1={veclen(\y1,\x1)} in
909            (shadingstartbox.sector center) circle (\n1);
910        \end{scope}
911        \tplonpage{\tpllastpage}{%
912          \begin{scope}[#1]
913            \path [#1] let
914              \p1 = (tplend),
915              \p3 = (current page text area.north west),
916              \p4 = (current page text area.south east) in
917                (\x3+.5\pgflinewidth,\y3+.5\pgflinewidth) --
918                (\x3+.5\pgflinewidth,\y1-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) -|
919                (\x4-.5\pgflinewidth,\y3+.5\pgflinewidth);
920          \end{scope}%
921        }%
922        \tplonmiddlepages{%
923          \begin{scope}[#1]
924            \path [#1,draw=none] let
925              \p1 = (current page text area.north west),
926              \p2 = (current page text area.south east) in
927                (\x1+.5\pgflinewidth,\y1+.5\pgflinewidth) --
928                (\x1+.5\pgflinewidth,\y2-.5\pgflinewidth) --
929                (\x2-.5\pgflinewidth,\y2-.5\pgflinewidth) --
930                (\x2-.5\pgflinewidth,\y1+.5\pgflinewidth) -- cycle;
931            \path [#1] let
932              \p1 = (current page text area.north west),
```

```latex
933        \p2 = (current page text area.south east) in
934          (\x1+.5\pgflinewidth,\y1+.5\pgflinewidth) --
935          (\x1+.5\pgflinewidth,\y2-.5\pgflinewidth)
936          (\x2-.5\pgflinewidth,\y2-.5\pgflinewidth) --
937          (\x2-.5\pgflinewidth,\y1+.5\pgflinewidth);
938        \end{scope}%
939      }%
940    \fi
941  \end{scope}
942 }
943
944 \NewDocumentCommand{\@askreplytikzquizframebox}{ m }{% Background box for quizzes
945   \begin{scope}[#1]
946     \ifnum\tplfirstpage=\tpllastpage
947       %\node[circle, radius=2pt, fill=yellow]
948       %  at ([xshift={(-\askreplyboxmargins-\askreplyparindent+\askreplyboxrule)},
949       %      yshift={(\ht\strutbox+1.5\askreplyboxvskip+0.5\askreplyboxrule)}]tplbegin) {};
950       \path [#1] let
951         \p1 = (tplbegin),
952         \p2 = (tplend),
953         \p3 = (current page text area.north west),
954         \p4 = (current page text area.south east) in
955          (\x4-.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) --
956          (\x4-.5\pgflinewidth,\y2-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) --
957          (\x3+.5\pgflinewidth,
958           \y2-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) [rounded corners=false] --
959          (\x3+.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) -- cycle;
960     \else
961       \path [#1] let
962         \p1 = (tplbegin),
963         \p3 = (current page text area.north west),
964         \p4 = (current page text area.south east) in
965          (\x3+.5\pgflinewidth,\y4-\dp\strutbox) [rounded corners=false] --
966          (\x3+.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) -|
967          (\x4-.5\pgflinewidth,\y4-\dp\strutbox);
968       \tplonpage{\tpllastpage}{%
969         \begin{scope}[#1]
970           \path [#1] let
971             \p1 = (tplend),
972             \p3 = (current page text area.north west),
973             \p4 = (current page text area.south east) in
974              (\x3+.5\pgflinewidth,\y3+.5\pgflinewidth) --
975              (\x3+.5\pgflinewidth,\y1-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) -|
976              (\x4-.5\pgflinewidth,\y3+.5\pgflinewidth);
977         \end{scope}%
```

```
978        }%
979      \tplonmiddlepages{%
980        \begin{scope}[#1]
981          \path [#1,draw=none] let
982            \p1 = (current page text area.north west),
983            \p2 = (current page text area.south east) in
984              (\x1+.5\pgflinewidth,\y1+.5\pgflinewidth) --
985              (\x1+.5\pgflinewidth,\y2-.5\pgflinewidth) --
986              (\x2-.5\pgflinewidth,\y2-.5\pgflinewidth) --
987              (\x2-.5\pgflinewidth,\y1+.5\pgflinewidth) -- cycle;
988          \path [#1] let
989            \p1 = (current page text area.north west),
990            \p2 = (current page text area.south east) in
991              (\x1+.5\pgflinewidth,\y1+.5\pgflinewidth) --
992              (\x1+.5\pgflinewidth,\y2-.5\pgflinewidth)
993              (\x2-.5\pgflinewidth,\y2-.5\pgflinewidth) --
994              (\x2-.5\pgflinewidth,\y1+.5\pgflinewidth);
995        \end{scope}%
996      }%
997    \fi
998  \end{scope}
999 }
1000
1001 %-- Storing and retrieving stuff macros
1002 %-------------------------------------
1003
1004 \newcommand{\askreply@storevaluetoaux}[3]{%
1005   % Usage: #1 = prefix - #2 = <env-number> - #3 = <length-name>
1006   \immediate\write\@auxout{\string\global\string\long\string\@namedef{askreply@#1@#2}{#3}}%
1007 }
1008
1009 \newcommand{\askreply@readvaluefromaux}[2]{%
1010   % Usage: #1 = prefix - #2 = <value-(number)-(text)-(length-without-pt)>
1011   %   e.g. |setlength{<length>}{\askreply@readvaluefromaux{\askreply@prefix{#1}}{#2}pt}
1012   \ifcsname askreply@#1@#2\endcsname%
1013     \@nameuse{askreply@#1@#2}%
1014   \else%
1015     \textbf{??}%
1016     \PackageWarning{askreply}%
1017       {Key 'askreply@#1@#2' not found in aux file. Maybe you need to recompile?}%
1018   \fi%
1019 }
1020
1021 \NewDocumentCommand{\getenvtitle}{ O{exercise} m }{%
1022   % Usage - #1 = <env-name>, #2 = <env-number>
```

```latex
1023    \ifstrequal{#1}{exercise}% For the exercise title
1024      {% Storage exists
1025        \ifcsname askreply@exercise@exercisetitle@#2\endcsname%
1026          \renewcommand{\currentexercisetitle}{%
1027            \askreply@readvaluefromaux{exercise}{exercisetitle@#2}}%
1028        \else% Storage is empty or not yet available
1029          \PackageWarning{askreply}%
1030            {Storage key not found in aux file. Maybe you need to recompile?}%
1031        \fi%
1032      }{}%
1033    \ifstrequal{#1}{subexercise}% For the subexercise title
1034      {% Storage exists   assignpoints@exercise@subexercisetitle@1.1
1035        \ifcsname askreply@exercise@subexercisetitle@#2\endcsname%
1036          \renewcommand{\currentsubexercisetitle}{%
1037            \askreply@readvaluefromaux{exercise}{subexercisetitle@#2}}%
1038        \else% Storage is empty or not yet available
1039          \PackageWarning{askreply}%
1040            {Storage key not found in aux file. Maybe you need to recompile?}%
1041        \fi%
1042      }{}%
1043  }
1044
1045  \providecommand{\exerciseID}{}
1046  \providecommand{\solutionID}{}
1047  \providecommand{\quizID}{}
1048  \providecommand{\answerID}{}
1049
1050  \NewDocumentCommand{\getenvID}{ O{exercise} m }{%
1051    % Usage - #1 = <env-name>, #2 = <env-number>
1052    \ifstrequal{#1}{exercise}% For the exercise ID
1053      {% Storage exists
1054        \ifcsname askreply@exercise@exerciseID@#2\endcsname%
1055          \renewcommand{\exerciseID}{%
1056            \askreply@readvaluefromaux{exercise}{exerciseID@#2}}%
1057        \else% Storage is empty or not yet available
1058          \renewcommand{\exerciseID}{}%
1059        \fi%
1060      }{}%
1061    \ifstrequal{#1}{solution}% For the solution ID
1062      {% Storage exists
1063        \ifcsname askreply@exercise@solutionID@#2\endcsname%
1064          \renewcommand{\solutionID}{%
1065            \askreply@readvaluefromaux{exercise}{solutionID@#2}}%
1066        \else% Storage is empty or not yet available
1067          \renewcommand{\solutionID}{}%
```

```
1068        \fi%
1069    }{}%
1070 }
1071
1072 %-- Environment counters and symbols
1073 %--------------------------------
1074
1075 %\@ifclassloaded{book}{%
1076 %\@ifundefined{chapter}{%
1077    \newcounter{exercise}%
1078    \newcounter{solution}%
1079    \newcounter{solutionnumber}%
1080    \newcounter{quiz}%
1081    \newcounter{answer}%
1082 %}{%
1083 %  \newcounter{exercise}[chapter]%
1084 %  \newcounter{solution}[chapter]%
1085 %  \newcounter{quiz}[chapter]%
1086 %  \newcounter{answer}[chapter]%
1087 %}%
1088
1089 \newcounter{subexercise}[exercise]
1090 \newcounter{subsolution}[solution]
1091 \newcounter{quizquestion}[quiz]
1092 \newcounter{mcqdemo}
1093 \newcounter{quizdemo}
1094 \newcounter{mcqquiztotaldemo}
1095 \newcounter{subanswer}[answer]
1096
1097 \newcounter{mcqproposal}[quizquestion]% Proposal IDs counter to choose within a quiz question
1098 \newcounter{mcqquiztotal}[quizquestion]% Total propositions counter within a quiz question
1099 \newcounter{mcqproposaldemo}[mcqdemo]% Proposal IDs counter to choose within a quiz question demo
1100
1101 \newcounter{mcqtrialnumber}[quizquestion]
1102
1103 % Exercise symbol: \faIcon{feather-alt}} \faPenFancy \faMarker \faQuestion
1104 % Solution icon: \faLightbulb \faLightbulb[regular] \faUbuntu \faInfo \faInfoCircle
1105
1106 \newcommand{\envsymbol}{}
1107 \newlength{\envsymbolheight}
1108 \newlength{\envsymbolwidth}
1109
1110 %- Setting quiz symbols: designed with the help of the Fontawesome icons packages v.4.6 and v.5.7
1111
1112 \newlength{\quizcheckboxwidth}
```

```latex
1113  \newlength{\quizcheckgap}
1114  \newlength{\quizsymbolwidth}
1115  \newlength{\quizanswerbuttonwidth}
1116
1117  \setlength{\quizcheckgap}{0.5em}
1118  \setlength{\quizsymbolwidth}{10pt}
1119  \setlength{\quizanswerbuttonwidth}{%
1120    \widthof{\scriptsize\lightbf{\textsc{\quizhideanswername}}}}%
1121  }%
1122  \addtolength{\quizanswerbuttonwidth}{12pt}% inner 2*xsep button style
1123
1124  % \faCheck width = 10.0 pt; \faTimes width = 7.85pt => same width in a box
1125  \newcommand{\checktick}{%
1126    \makebox[\quizsymbolwidth][c]{%
1127      \textcolor{green!60!black}{\normalfont\normalsize\faCheck}%
1128    }%
1129  }
1130  \newcommand{\crosstick}{%
1131    \makebox[\quizsymbolwidth][c]{%
1132      \textcolor{red!60!black}{\normalfont\normalsize\faTimes}%
1133    }%
1134  }
1135
1136  %-- Setting displaying and recording useful commands
1137  %------------------------------------------------
1138
1139  \newcommand{\phantomtext}{\vspace*{\dimexpr-\baselineskip-\askreplyboxvskip\relax}\phantom{Hg}}
1140
1141  \begingroup%
1142    \catcode`P=12 \catcode`T=12 \lowercase{\endgroup
1143    \def\askreplysplitbefore#1{%
1144      \expandafter\askreply@strip@pt\expandafter\@askreplysplitbefore\the\dimexpr#1PT\relax\@nil
1145    }
1146    \def\askreplyssplitafter#1{%
1147      \expandafter\askreply@strip@pt\expandafter\@askreplysplitafter\the\dimexpr#1PT\relax\@nil
1148    }
1149    \def\@askreplysplitbefore#1.#2.#3PT\@nil{#1}
1150    \def\@askreplysplitafter#1.#2.#3PT\@nil{#2}
1151    \def\askreply@strip@pt#1#2PT#3\@nil{#1#2..PT\@nil}
1152  } % balance the open brace after \lowercase
1153
1154  \newcommand\askreplytwodigits[1]{%
1155    \ifnum#1<10 0#1\else #1\fi
1156  }
1157
```

```
1158 \newtoggle{askreply@points}
1159 \@ifpackageloaded{texjazz-assignpoints}%
1160   {\toggletrue{askreply@points}}{\togglefalse{askreply@points}}
1161
1162
1163 %----------------------------------------------------------------------------------------
1164 %-- Defining the different environments with options (PGFKeys and l3keys2e system)
1165 %----------------------------------------------------------------------------------------
1166
1167 %-- Managing key-value options of commands (PGFKeys)
1168 %-----------------------------------------------------
1169
1170 %- https://tex.stackexchange.com/questions/521011/how-is-a-pgf-key-defined/
1171 \newif\ifaskreply@display\askreply@displaytrue %or display/.default=true
1172 \newif\ifaskreply@storing\askreply@storingtrue %or storing/.default=true
1173 \newif\ifaskreply@list\askreply@listtrue %or list/.default=true
1174
1175 \pgfkeys{%
1176   /askreply/.is family, /askreply/.cd,
1177   display/.is if=askreply@display,
1178   %display/.default=true,% DOES NOT WORK! WHY?
1179   storing/.is if=askreply@storing,
1180   %storing/.default=true,% DOES NOT WORK! WHY?
1181   list/.is if=askreply@list,
1182   %list/.default=true,% DOES NOT WORK! WHY?
1183   title/.store in=\askreply@title,
1184   title=,
1185   level/.is choice,
1186   level/basic/.code=\def\askreply@level{basic},
1187   level/intermediate/.code=\def\askreply@level{intermediate},
1188   level/advanced/.code=\def\askreply@level{advanced},
1189   level/.default=\def\askreply@level{},
1190   before skip/.store in=\askreply@beforeskip,
1191   before skip=6pt,
1192   after skip/.store in=\askreply@afterskip,
1193   after skip=6pt,
1194   text color/.store in=\askreply@textcolor,
1195   text color=black,
1196   points/.store in=\askreply@editpoints,
1197   points=,
1198   symbol/.store in=\askreply@envsymbol,
1199   symbol=,
1200   ID/.store in=\askreply@ID,
1201   ID=,
1202 }
```

```latex
1203
1204 \newenvironment{askreplybox}{%
1205   %\centering%
1206   \list{}{%
1207     \leftmargin\askreplyboxmargins%
1208     \rightmargin\leftmargin%
1209     \listparindent\askreplyparindent%
1210     \itemindent\askreplyparindent%
1211     \parsep\parskip%
1212   }%
1213   \item\relax%
1214 }{\endlist}
1215
1216 %- Box height measurement
1217 \newlength{\askreply@detect@boxheight}
1218 \newtcolorbox{askreply@measurebox}[2][]{% From http://tex.stackexchange.com/questions/203194/
1219   blank,%show bounding box, parbox=false,
1220   overlay={\xdef#2{\tcb@height}},
1221   #1
1222 }
1223
1224 %- https://tex.stackexchange.com/questions/428462/[...]
1225 %-    [...]how-can-i-dynamically-set-the-box-height-to-the-max-height-of-a-group-of-boxes
1226
1227 % Backend boxmaker
1228 %\long\def\askreply@box#1#2#3{%
1229 %  \tikz\node[draw, line width=.4pt, inner sep=2pt,outer sep=0pt,align=left,minimum width=#2,minimum
1230      height=#3]
1230 %{\parbox{\dimexpr#2-4pt}{\raggedright\small#1}};}
1231
1232 % User-level boxmaker
1233 %\long\def\nodebox#1#2#3{\ABC@box{#1}{#2}{#3}\kern-.4pt}% kern used to horizontally shift boxes back by
1234      stroke width of frame
1234
1235 %\newdimen\nodeboxminHT
1236 %\nodeboxminHT=1cm\relax
1237
1238 %\NewEnviron{formrow}{%
1239 %  \leavevmode\unskip\par\sbox\@tempboxa{\BODY}\nodeboxminHT=\the\ht\@tempboxa\BODY\ignorespaces}
1240
1241
1242
1243 %-- Generic single and multiple MCQs definitions (OCG/OCMD PDF: `ocgx2` package)
1244 %--------------------------------------------------------------------------
1245
```

```
1246  %- From: https://tex.stackexchange.com/questions/486148/[...]
1247  %-           [...]avoid-passing-an-empty-optional-argument-an-environment-with-verbatim-content
1248  %-       https://tex.stackexchange.com/questions/490706/[...]
1249  %-           [...]ocgx2-verify-and-reset-of-multiple-choice-questions-with-ocgs
1250  %-       https://tex.stackexchange.com/questions/493987/[...]
1251  %-           [...]ocgx2-xparse-expl3-splitting-comma-separated-ocmd-ocgs-lists-of-arguments-for
1252
1253  %----------------------------
1254  %-- ESSENTIAL! ONLY USE A POINT AS OCG SEPARATOR: ERROR WITH COLON AND @ --> WHY? (French spaces?)
1255  %----------------------------
1256
1257  %- Only a step for single solution MCQs: proposal button
1258
1259  \NewDocumentCommand{\quizSingleButton}{m}{% Based on AG's \quizButton command
1260    % Syntax – #1: id choice
1261    % Action on click: toggle myself (choice layer), hide verifcation layer
1262    \stepcounter{mcqproposal}%
1263    \stepcounter{mcqquiztotal}%
1264    \setlength{\quizcheckboxwidth}{\widthof{\faIcon[regular]{circle}}}%
1265    \makebox[\quizcheckboxwidth][c]{%
1266      %\actionsocg{#1}{}{verify:\thequizquestion}{\faIcon[regular]{circle}}%
1267      \actionsocg{#1}{}{verify.\thequiz.\thequizquestion}{\faIcon[regular]{circle}}%
1268    }%
1269    %\begin{ocg}[radiobtngrp=choice:\thequizquestion]{#1}{#1}{off}% choice layer
1270    \begin{ocg}[radiobtngrp=choice.\thequiz.\thequizquestion]{#1}{#1}{off}% choice layer
1271      %\makebox[\widthof{\faCircleThin}]{\textcolor{green!60!black}{\faCheck}}%
1272      %\makebox[\quizcheckboxwidth]{\textcolor{green!60!black}{\faIcon[solid]{dot-circle}}}%
1273      \hspace*{-\quizcheckboxwidth}%
1274      \makebox[\widthof{\faIcon[regular]{circle}}][c]{\textcolor{green!60!black}{\faDotCircle}}%
1275      \hspace*{-\quizcheckboxwidth}%
1276      \makebox[\quizcheckboxwidth][c]{\textcolor{askreplyfirstcolor}{\faIcon[regular]{circle}}}%
1277    \end{ocg}%
1278  }
1279
1280  \NewDocumentCommand{\quizSingleButtonDemo}{m}{% Based on AG's \quizButton command
1281    % Syntax – #1: id choice
1282    % Action on click: toggle myself (choice layer), hide verifcation layer
1283    \stepcounter{mcqproposaldemo}%
1284    \stepcounter{mcqquiztotaldemo}%
1285    \setlength{\quizcheckboxwidth}{\widthof{\faIcon[regular]{circle}}}%
1286    \makebox[\quizcheckboxwidth][c]{%
1287      %\actionsocg{#1}{}{verify:\thequizquestion}{\faIcon[regular]{circle}}%
1288      \actionsocg{#1}{}{verify.\thequizdemo.\themcqdemo}{\faIcon[regular]{circle}}%
1289    }%
1290    \begin{ocg}[radiobtngrp=choice.\thequizdemo.\themcqdemo]{#1}{#1}{off}% choice layer
```

44

```latex
1291      \hspace*{-\quizcheckboxwidth}%
1292      \makebox[\widthof{\faIcon[regular]{circle}}][c]{\textcolor{green!60!black}{\faDotCircle}}%
1293      \hspace*{-\quizcheckboxwidth}%
1294      \makebox[\quizcheckboxwidth][c]{\textcolor{askreplyfirstcolor}{\faIcon[regular]{circle}}}%
1295    \end{ocg}%
1296 }
1297
1298 %- Defining a proposition for single solution MCQ
1299
1300 \NewDocumentCommand{\mcqproposalSingle}{o m}{%
1301    % Syntax - #1 = more tcbox options
1302    %          #2 = statement proposal
1303    \begin{tcolorbox}[%
1304      breakable, enhanced,
1305      notitle, colframe=black!60, colback=white,
1306      boxrule=0.2pt, arc=0.4pt, boxsep = 0pt,
1307      left = 4pt, right = 4pt,
1308      top = 4pt, bottom = 4pt,
1309      before skip=4pt, after skip=4pt,
1310      IfValueTF={#1}{#1}{},% More options
1311      ]
1312      \parbox[t]{16pt}{%
1313        \hspace*{2pt}%
1314        %\quizSingleButton{mcqproposalref:\thequizquestion:\themcqproposal}
1315        \quizSingleButton{mcqproposalref.\thequiz.\thequizquestion.\themcqproposal}
1316      }%
1317      \parbox[t]{\linewidth-16pt}{#2}%
1318    \end{tcolorbox}%
1319 }
1320
1321 \NewDocumentCommand{\mcqproposalSingleDemo}{o m}{%
1322    % Syntax - #1 = more tcbox options
1323    %          #2 = statement proposal
1324    \begin{tcolorbox}[%
1325      breakable, enhanced,
1326      notitle, colframe=black!60, colback=white,
1327      boxrule=0.2pt, arc=0.4pt, boxsep = 0pt,
1328      left = 4pt, right = 4pt,
1329      top = 4pt, bottom = 4pt,
1330      before skip=4pt, after skip=4pt,
1331      IfValueTF={#1}{#1}{},% More options
1332      ]
1333      \parbox[t]{16pt}{%
1334        \hspace*{2pt}%
1335        \quizSingleButtonDemo{mcqproposalref.\thequizdemo.\themcqdemo.\themcqproposaldemo}
```

```
1336        }%
1337      \parbox[t]{\linewidth-16pt}{#2}%
1338    \end{tcolorbox}%
1339 }

1340
1341 %- Only a step for multiple solution MCQs (based on AG's \quizButton command)
1342
1343 \NewDocumentCommand{\quizMultipleButton}{m}{%
1344    % Syntax – #1: choice id for answering proposal
1345    % Action on click: toggle myself (choice layer), hide verifcation layer
1346    \stepcounter{mcqproposal}%
1347    \stepcounter{mcqquiztotal}%
1348    \setlength{\quizcheckboxwidth}{\widthof{\faIcon[regular]{square}}}%
1349    \makebox[\quizcheckboxwidth][c]{%
1350      %\actionsocg{#1}{}{verify:\thequizquestion}{\faIcon[regular]{square}}%
1351      \actionsocg{#1}{}{verify.\thequiz.\thequizquestion}{\faIcon[regular]{square}}%
1352    }%
1353    %\makebox[0pt][l]{\actionsocg{#1}{}{verify:\thequizquestion}{\faSquareO}}%
1354    \begin{ocg}{#1}{#1}{off}% choice layer
1355      %\makebox[\widthof{\faSquareO}]{\textcolor{green!60!black}{\faCheck}}%
1356      \hspace*{-\quizcheckboxwidth}%
1357      \makebox[\quizcheckboxwidth][c]{\textcolor{green!60!black}{\faCheckSquare}}%
1358      \hspace*{-\quizcheckboxwidth}%
1359      \makebox[\quizcheckboxwidth][c]{\textcolor{askreplyfirstcolor}{\faIcon[regular]{square}}}%
1360    \end{ocg}%
1361 }

1362
1363 \NewDocumentCommand{\quizMultipleButtonDemo}{m}{%
1364    % Syntax – #1: choice id for answering proposal
1365    % Action on click: toggle myself (choice layer), hide verifcation layer
1366    \stepcounter{mcqproposaldemo}%
1367    \stepcounter{mcqquiztotaldemo}%
1368    \setlength{\quizcheckboxwidth}{\widthof{\faIcon[regular]{square}}}%
1369    \makebox[\quizcheckboxwidth][c]{%
1370      \actionsocg{#1}{}{verify.\thequizdemo.\themcqdemo}{\faIcon[regular]{square}}%
1371    }%
1372    \begin{ocg}{#1}{#1}{off}% choice layer
1373      \hspace*{-\quizcheckboxwidth}%
1374      \makebox[\quizcheckboxwidth][c]{\textcolor{green!60!black}{\faCheckSquare}}%
1375      \hspace*{-\quizcheckboxwidth}%
1376      \makebox[\quizcheckboxwidth][c]{\textcolor{askreplyfirstcolor}{\faIcon[regular]{square}}}%
1377    \end{ocg}%
1378 }

1379
1380 %- Defining a proposition for multiple solution MCQ
```

46

```
1381
1382  \NewDocumentCommand{\mcqproposalMultiple}{o m}{%
1383    % Syntax - #1 = more tcbox options
1384    %          #2 = answering proposal/statement
1385    \begin{tcolorbox}[%
1386      breakable, enhanced,
1387      notitle, colframe=black!60, colback=white,
1388      boxrule=0.2pt, arc=0.4pt, boxsep = 0pt,
1389      left = 4pt, right = 4pt,
1390      top = 4pt, bottom = 4pt,
1391      before skip=4pt, after skip=4pt,
1392      IfValueTF={#1}{#1}{},% More options
1393      ]
1394      \parbox[t]{16pt}{%
1395        \hspace*{2pt}%
1396        %\quizMultipleButton{mcqproposalref:\thequizquestion:\themcqproposal}%
1397        \quizMultipleButton{mcqproposalref.\thequiz.\thequizquestion.\themcqproposal}%
1398      }%
1399      \parbox[t]{\linewidth-16pt}{#2}%
1400    \end{tcolorbox}%
1401  }
1402
1403  \NewDocumentCommand{\mcqproposalMultipleDemo}{o m}{%
1404    % Syntax - #1 = more tcbox options
1405    %          #2 = answering proposal/statement
1406    \begin{tcolorbox}[%
1407      breakable, enhanced,
1408      notitle, colframe=black!60, colback=white,
1409      boxrule=0.2pt, arc=0.4pt, boxsep = 0pt,
1410      left = 4pt, right = 4pt,
1411      top = 4pt, bottom = 4pt,
1412      before skip=4pt, after skip=4pt,
1413      IfValueTF={#1}{#1}{},% More options
1414      ]
1415      \parbox[t]{16pt}{%
1416        \hspace*{2pt}%
1417        \quizMultipleButtonDemo{mcqproposalref.\thequizdemo.\themcqdemo.\themcqproposaldemo}%
1418      }%
1419      \parbox[t]{\linewidth-16pt}{#2}%
1420    \end{tcolorbox}%
1421  }
1422
1423  %--- Note: Splitting a list of arguments
1424  %-------------------------------------
1425  %- See our review and especially Marcel Kruger's answer (LaTeX3 syntax) in:
```

```
1426  %-    https://tex.stackexchange.com/questions/493987/[...]
1427  %-      [...]ocgx2-xparse-expl3-splitting-comma-separated-ocmd-ocgs-lists-of-arguments-for
1428  %- See also, for example, Enrico Gregorio's and David Carlisle's answers:
1429  %-    https://tex.stackexchange.com/questions/110898/package-xparse-splitlist-last-token
1430  %-    https://tex.stackexchange.com/questions/348042/splitlist-on-several-delimiters
1431  %-----
1432
1433  %- Setting OCGs reference names: LaTeX3 syntax because of its use by the `ocgx2` package
1434
1435  \NewDocumentCommand{\askreplymcqArgsIds}{m}{%
1436    %mcqproposalref:\thequizquestion:#1%
1437    mcqproposalref.\thequiz.\thequizquestion.#1%
1438  }
1439
1440  \NewDocumentCommand{\askreplymcqArgsIdsDemo}{m}{%
1441    mcqproposalref.\thequizdemo.\themcqdemo.#1%
1442  }
1443
1444  %- Defining a sequence for storing the "massaged" items
1445
1446  \ExplSyntaxOn
1447
1448  \cs_new_protected:Npn \askreplymcq_process_list:Nn #1 #2
1449    {
1450      % clear the sequence
1451      \seq_clear:N #1
1452      % cycle through the arguments, storing "\mcqArgsIds{<arg>}" in the sequence
1453      \clist_map_inline:nn { #2 }
1454        {
1455          % Here :Nx instead of :Nn ensures that \askreplymcqArgsIds
1456          % is actually evaluated instead of passed as-is
1457          \seq_put_right:Nx #1 { \askreplymcqArgsIds{##1} }
1458        }
1459    }
1460
1461  \cs_new_protected:Npn \askreplymcqdemo_process_list:Nn #1 #2
1462    {
1463      % clear the sequence
1464      \seq_clear:N #1
1465      % cycle through the arguments, storing "\mcqArgsIdsDemo{<arg>}" in the sequence
1466      \clist_map_inline:nn { #2 }
1467        {
1468          % Here :Nx instead of :Nn ensures that \askreplymcqArgsIdsDemo
1469          % is actually evaluated instead of passed as-is
1470          \seq_put_right:Nx #1 { \askreplymcqArgsIdsDemo{##1} }
```

```
1471            }
1472       }
1473
1474   %- Defining a "Verify" button both for single and multiple MCQs
1475
1476   \seq_new:N \l_correct_seq
1477   \seq_new:N \l_wrong_seq
1478
1479   \cs_new_protected:Npn \askreplymcq__verify:nn #1 #2
1480     {
1481       %\showocg{verify:\thequizquestion}{%
1482       % ONLY USE POINT AS SEPARATOR: ERROR WITH COLON AND @ --> WHY?
1483       \showocg{verify.\thequiz.\thequizquestion}{%
1484         \begin{tikzpicture}
1485           \node[quizbutton=askreplybuttongray] (checksolutionbutton)
1486             {\strut\scriptsize\lightbf{\textsc{\sffamily\quizverifyname}}};%
1487         \end{tikzpicture}%
1488       }
1489       %\begin{ocg}{verify:\thequizquestion}{verify:\thequizquestion}{off}% verification layer
1490       \begin{ocg}{verify.\thequiz.\thequizquestion}{verify.\thequiz.\thequizquestion}{off}% verification layer
1491         \makebox[0pt][l]{%
1492           \begin{ocmd}{\Not{\And{#1,\Not{\Or{#2}}}}}% "wrong" layer (OCMD)
1493             \hspace*{0.25em}%
1494             \raisebox{5pt}{\textcolor{red!60!black}{\faTimes}}%Wrong.
1495           \end{ocmd}%
1496         }%
1497         \begin{ocmd}{\And{#1,\Not{\Or{#2}}}}% "correct" layer (OCMD)
1498           \hspace*{0.25em}%
1499           \raisebox{5pt}{\textcolor{green!60!black}{\faCheck}}%Correct.
1500         \end{ocmd}%
1501       \end{ocg}%
1502     }
1503
1504   \cs_new_protected:Npn \askreplymcqdemo__verify:nn #1 #2
1505     {
1506       %\showocg{verify:\thequizquestion}{%
1507       % ONLY USE POINT AS SEPARATOR: ERROR WITH COLON AND @ --> WHY?
1508       \showocg{verify.\thequizdemo.\themcqdemo}{%
1509         \begin{tikzpicture}
1510           \node[quizbutton=askreplybuttongray] (checksolutionbutton)
1511             {\strut\scriptsize\lightbf{\textsc{\sffamily\quizverifyname}}};%
1512         \end{tikzpicture}%
1513       }
1514       %\begin{ocg}{verify:\thequizquestion}{verify:\thequizquestion}{off}% verification layer
1515       \begin{ocg}{verify.\thequizdemo.\themcqdemo}{verify.\thequizdemo.\themcqdemo}{off}% verification layer
```

```latex
1516        \makebox[0pt][l]{%
1517          \begin{ocmd}{\Not{\And{#1,\Not{\Or{#2}}}}}% "wrong" layer (OCMD)
1518            \hspace*{0.25em}%
1519            \raisebox{5pt}{\textcolor{red!60!black}{\faTimes}}%Wrong.
1520          \end{ocmd}%
1521        }%
1522        \begin{ocmd}{\And{#1,\Not{\Or{#2}}}}% "correct" layer (OCMD)
1523          \hspace*{0.25em}%
1524          \raisebox{5pt}{\textcolor{green!60!black}{\faCheck}}%Correct.
1525        \end{ocmd}%
1526      \end{ocg}%
1527    }
1528
1529 \cs_generate_variant:Nn \askreplymcq__verify:nn {ff}
1530
1531 \cs_generate_variant:Nn \askreplymcqdemo__verify:nn {ff}
1532
1533 \NewDocumentCommand{\mcqverify}{ m m }{%
1534   % Syntax - #1: list of OCG ids of correct/required answer(s), comma separated
1535   %          #2: list of OCG ids of wrong answer(s), comma separated
1536   \askreplymcq_process_list:Nn \l_correct_seq { #1 }% Save OCMD IDs as LaTeX3 seq variable
1537   \askreplymcq_process_list:Nn \l_wrong_seq { #2 }% Save OCMD IDs as LaTeX3 seq variable
1538   \askreplymcq__verify:ff { \seq_use:Nn \l_correct_seq {,} } { \seq_use:Nn \l_wrong_seq {,} }
1539 }
1540
1541 \NewDocumentCommand{\mcqverifydemo}{ m m }{%
1542   % Syntax - #1: list of OCG ids of correct/required answer(s), comma separated
1543   %          #2: list of OCG ids of wrong answer(s), comma separated
1544   \askreplymcqdemo_process_list:Nn \l_correct_seq { #1 }% Save OCMD IDs as LaTeX3 seq variable
1545   \askreplymcqdemo_process_list:Nn \l_wrong_seq { #2 }% Save OCMD IDs as LaTeX3 seq variable
1546   \askreplymcqdemo__verify:ff { \seq_use:Nn \l_correct_seq {,} } { \seq_use:Nn \l_wrong_seq {,} }
1547 }
1548
1549 \ExplSyntaxOff
1550
1551 %- Defining a "Reset" button both for single and multiple MCQs: "old fashion" but works
1552
1553 \NewDocumentCommand{\mcqreset}{}{%
1554   \def\ocglistreset{}%
1555   \xdef\ocglistreset{%
1556     %|ocglistreset|\space verify:\thequizquestion\space showanswer:\thequizquestion}%
1557     %|ocglistreset|\space verify:\thequizquestion\space showanswer:\thequiz:\thequizquestion}%
1558     \ocglistreset\space verify.\thequiz.\thequizquestion\space showanswer.\thequiz.\thequizquestion}%
1559   \foreach \X in {1,...,\value{mcqquiztotal}} {%
1560     %|xdef|ocglistreset{\ocglistreset\space mcqproposalref:\thequizquestion:\X}%
```

50

```
1561      \xdef\ocglistreset{\ocglistreset\space mcqproposalref.\thequiz.\thequizquestion.\X}%
1562    }%
1563    \hideocg{\ocglistreset}{%
1564      \begin{tikzpicture}
1565        \node[quizbutton=askreplybuttongray] (resetbutton)
1566          {\strut\scriptsize\textsf{\textsc{\lightbf{\quizresetname}}}};
1567      \end{tikzpicture}%
1568    }%
1569  }
1570
1571  \NewDocumentCommand{\mcqresetdemo}{}{%
1572    \def\ocglistreset{}%
1573    \xdef\ocglistreset{%
1574      \ocglistreset\space verify.\thequizdemo.\themcqdemo\space showanswer.\thequizdemo.\themcqdemo}%
1575    \foreach \X in {1,...,\value{mcqquiztotaldemo}} {%
1576      \xdef\ocglistreset{\ocglistreset\space mcqproposalref.\thequizdemo.\themcqdemo.\X}%
1577    }%
1578    \hideocg{\ocglistreset}{%
1579      \begin{tikzpicture}
1580        \node[quizbutton=askreplybuttongray] (resetbutton)
1581          {\strut\scriptsize\textsf{\textsc{\lightbf{\quizresetname}}}};
1582      \end{tikzpicture}%
1583    }%
1584  }
1585
1586  %- Defining the "Reset" button (both for single and multiple MCQs)
1587
1588  \ExplSyntaxOn
1589
1590  \NewDocumentCommand{\mcqresetButton}{m}{% AG's definition (LaTeX3): to be adapted (see \mcqreset)
1591    % Syntax - #1: list of OCG ids, comma separated
1592    \clist_set:Nn\l_tmpa_clist{#1} % save OCG ids as LaTeX3 clist variable
1593    \hideocg{\clist_use:Nn\l_tmpa_clist{~}}{\fbox{\strut\sffamily\quizresetname}}%
1594  }
1595
1596  \ExplSyntaxOff
1597
1598  %- Defining a "Show/Hide answer" button both for single and multiple MCQs
1599
1600  \NewDocumentCommand{\mcqdisplayanswer}{ s O{b} m D(){6pt,12pt} }{%
1601    % Syntax - #1: switch between answer in the margin (no star) and as tooltip (star)
1602    %          #2: position [b]/[c]/[t] for answer in the margin
1603    %          #3: explanation text to display
1604    %          #4: position control (<xshift-length>,<yshift-length>) for answer in as tooltip
1605    \makebox[0pt][l]{%
```

```latex
1606    %\actionsocg{showanswer:\thequizquestion}{}{verify:\thequizquestion}{%
1607    %\actionsocg{showanswer.\thequiz:\thequizquestion}{}{verify:\thequizquestion}{%
1608    \actionsocg{showanswer.\thequiz.\thequizquestion}{}{verify.\thequiz.\thequizquestion}{%
1609      \begin{tikzpicture}
1610        \node[quizbutton=askreplybuttongray] (displayshowanswerbutton)
1611          {\strut\scriptsize\textsf{\textsc{\lightbf{\quizshowanswername}}}};%
1612      \end{tikzpicture}%
1613    }%
1614  }%
1615  %\begin{ocg}{showanswer:\thequizquestion}{showanswer:\thequizquestion}{off}% show/hide answer layer
1616  %\begin{ocg}{showanswer\thequiz:\thequizquestion}{showanswer:\thequiz:\thequizquestion}{off}% show/hide
          answer layer
1617  \begin{ocg}{showanswer.\thequiz.\thequizquestion}{showanswer.\thequiz.\thequizquestion}{off}% show/hide
          answer layer
1618    \makebox[\quizanswerbuttonwidth][l]{%
1619      \begin{tikzpicture}
1620        \node[quizbutton={black!60!white}] (displayhideanswerbutton)
1621          {\strut\scriptsize\textsf{\textsc{\lightbf{\quizhideanswername}}}};%
1622      \end{tikzpicture}%
1623    }%
1624    \IfBooleanTF{#1}
1625      {\mcqtooltip{#3}(#4)}%
1626      {\mcqmarginbox[#2]{#3}}%
1627  \end{ocg}
1628 }

1629
1630 \NewDocumentCommand{\mcqdisplayanswerdemo}{ s O{b} m D(){6pt,12pt} }{%
1631 % Syntax - #1: switch between answer in the margin (no star) and as tooltip (star)
1632 %           #2: position [b]/[c]/[t] for answer in the margin
1633 %           #3: explanation text to display
1634 %           #4: position control (<xshift-length>,<yshift-length>) for answer in as tooltip
1635  \makebox[0pt][l]{%
1636    \actionsocg{showanswer.\thequizdemo.\themcqdemo}{}{verify.\thequizdemo.\themcqdemo}{%
1637      \begin{tikzpicture}
1638        \node[quizbutton=askreplybuttongray] (displayshowanswerbutton)
1639          {\strut\scriptsize\textsf{\textsc{\lightbf{\quizshowanswername}}}};%
1640      \end{tikzpicture}%
1641    }%
1642  }%
1643  \begin{ocg}{showanswer.\thequizdemo.\themcqdemo}{showanswer.\thequizdemo.\themcqdemo}{off}% show/hide
          answer layer
1644    \makebox[\quizanswerbuttonwidth][l]{%
1645      \begin{tikzpicture}
1646        \node[quizbutton={black!60!white}] (displayhideanswerbutton)
1647          {\strut\scriptsize\textsf{\textsc{\lightbf{\quizhideanswername}}}};%
```

```latex
1648      \end{tikzpicture}%
1649    }%
1650    \IfBooleanTF{#1}
1651      {\mcqtooltip{#3}(#4)}%
1652      {\mcqmarginbox[#2]{#3}}%
1653  \end{ocg}
1654 }
1655
1656 %- Defining a macro to display the answer in the margin
1657
1658 \newcommand\mcqtikzmark[1]{%
1659  \tikz[remember picture,overlay]\node[inner xsep=0pt,outer sep=0pt] (#1) {};}
1660
1661 \newlength{\quiztrianglexshift}
1662 \newlength{\quizuppertrianglecorner}
1663 \newlength{\quizboxhshift}
1664 \newlength{\quizboxvshift}
1665 \newlength{\quiznoteheight}
1666
1667 \newcommand\quizside{}
1668 \newcommand\quizotherside{}
1669 \newcommand\quizpointeranchor{}
1670 \newcommand\quizboxanchor{}
1671
1672 \newcounter{mcqdisplaycount}
1673
1674 %\NewDocumentCommand{\mcqmarginbox}{O{b} O{askreplythirdcolor} O{\quizexplanationname} m}{%
1675 \NewDocumentCommand{\mcqmarginbox}{O{b} m}{%
1676  \checkoddpage
1677  \ifoddpageoroneside
1678    \setlength\quiztrianglexshift{-3pt}%
1679    \setlength\quizboxhshift{\marginparsep}% Original setting (Gonzalo Medina): see \caution
1680    %\addtolength\quizboxhshift{\marginparsep}% Why? Side effect of `tcolorbox` package?
1681    \addtolength\quizboxhshift{16pt}% Because inside two tcboxes: quiz + question -> leftsep=10pt+6pt
1682    \addtolength\quizboxhshift{16pt}% Because inside two tcboxes: quiz + question -> rightsep=10pt+6pt
1683    %\addtolength\quizboxhshift{3pt}% Adding quiztrianglexshift
1684    \addtolength\quizboxhshift{-3pt}% Adding quiztrianglexshift
1685    \addtolength\quizboxhshift{-0.4pt}% Subtracting 0.5 box linewidth (thick = 0.8pt): see \tikz below
1686    \renewcommand{\quizside}{west}%
1687    \renewcommand{\quizotherside}{east}%
1688  \else
1689    \setlength\quiztrianglexshift{3pt}%
1690    \setlength\quizboxhshift{-\marginparsep}%
1691    \renewcommand{\quizside}{east}%
1692    \renewcommand{\quizotherside}{west}%
```

```latex
1693    \fi%
1694    \settoheight{\quiznoteheight}{%
1695      \ifstrempty{#2}%
1696        {\parbox{\marginparwidth-8pt-0.8pt}{%
1697          \footnotesize\ttfamily Sorry, no answer available}}%
1698        {\parbox{\marginparwidth-8pt-0.8pt}{\footnotesize #2}}%
1699    }% thick=0.8pt
1700    \stepcounter{mcqdisplaycount}%
1701    \mcqtikzmark{\themcqdisplaycount}%
1702    \if#1b\relax
1703      \renewcommand\quizpointeranchor{mcqdisplaycount\themcqdisplaycount.south \quizside}%
1704      \renewcommand\quizboxanchor{south \quizside}%
1705      \setlength\quizboxvshift{\quiznoteheight}%
1706      \addtolength\quizboxvshift{-.6\baselineskip}% Adjust the vertical shift with the text line
1707      \setlength\quizuppertrianglecorner{13pt}%
1708    \else
1709      \if#1t\relax
1710        \renewcommand\quizpointeranchor{mcqdisplaycount\themcqdisplaycount.north \quizside}%
1711        \renewcommand\quizboxanchor{north \quizside}%
1712        \setlength\quizboxvshift{-\quiznoteheight}%
1713        \addtolength\quizboxvshift{.6\baselineskip}% Adjust the vertical shift with the text line
1714        \setlength\quizuppertrianglecorner{-7pt}%
1715      \else
1716        \if#1c\relax
1717          \renewcommand\quizpointeranchor{mcqdisplaycount\themcqdisplaycount.\quizside}%
1718          \renewcommand\quizboxanchor{\quizside}%
1719          %\setlength\quizboxvshift{\baselineskip}% No vertical shift, just centered with the text line
1720          % We try here to align the bottom margin box with the one of the quiz question tcbox
1721          %\addtolength\quizboxvshift{\quiznoteheight}% Empirical/test value
1722          %\addtolength\quizboxvshift{-4pt}% bottomsep = 4pt
1723          \setlength\quizuppertrianglecorner{3pt}%
1724        \fi%
1725      \fi%
1726    \fi%
1727    \marginnote{%
1728      \begin{tikzpicture}[remember picture, overlay]
1729        \node[draw=askreplythirdcolor, line width=0.8pt, anchor=\quizside,
1730              xshift=\quizboxhshift, yshift=\quizboxvshift, inner sep=4pt]
1731        (mcqdisplaycount\themcqdisplaycount)
1732        at ([yshift=3pt]current page text area.\quizotherside|-\themcqdisplaycount)
1733        {%
1734          \ifstrempty{#2}%
1735            {\parbox{\marginparwidth-8pt-0.8pt}{%
1736              \footnotesize\ttfamily Sorry, no answer available}}%
1737            {\parbox{\marginparwidth-8pt-0.8pt}{\vskip4pt\footnotesize #2\vskip2pt}}%
```

```
1738        };% thick=0.8pt
1739      \node[fill=white, font=\color{askreplythirdcolor}\sffamily, anchor=west,
1740          inner sep=2pt, xshift=7pt, yshift=0pt]
1741      at (mcqdisplaycount\themcqdisplaycount.north west)
1742      {\small\enspace\textcolor{black}{\textsc{\footnotesize\quizexplanationname}}\enspace};
1743      \fill[askreplythirdcolor]
1744          ([yshift=\quizuppertrianglecorner]\quizpointeranchor) --
1745          ([yshift=\quizuppertrianglecorner-3pt,xshift=\quiztrianglexshift]\quizpointeranchor) --
1746          ([yshift=\quizuppertrianglecorner-6pt]\quizpointeranchor) -- cycle;
1747    \end{tikzpicture}%
1748  }%
1749 }
1750
1751 %- Defining "tooltip" commands to display answers (the margin displaying is not always relevant)
1752
1753 %--- Note: How to define tooltips
1754 %-------------------------------
1755 %- For the moment being (fall 2019), only AR and Evince viewer supports tooltips (like for OCGs).
1756 %- From: https://tex.stackexchange.com/questions/155518/tooltip-that-works-with-all-pdf-readers
1757 %- Important update: since spring 2020 OCG, OCMG and JavaScript are supported by Okular!
1758 %- See: https://tex.stackexchange.com/questions/235139/using-the-animate-package-without-adobe
1759 %-----
1760
1761 \ExplSyntaxOn
1762 \let\askreplytpPdfLink\pbs_pdflink:nn
1763 \let\askreplycListSet\clist_set:Nn
1764 \let\askreplycListItem\clist_item:Nn
1765 \ExplSyntaxOff
1766
1767 \newsavebox\askreplytiptext\newcounter{askreplytcnt}
1768
1769 \newlength{\askreplywhatsleft}
1770 \newlength{\askreplytipshift}
1771
1772 \NewDocumentCommand{\mcqtooltip}{ m D(){0pt,0pt} }{%
1773    \leavevmode%
1774    \sbox\askreplytiptext{%
1775    \tcbox[enhanced, colframe=askreplythirdcolor, colback=white, boxrule=0.8pt,
1776          attach boxed title to top left={xshift=7pt, yshift=-\tcboxedtitleheight/2},
1777          boxed title style={boxrule=0pt,colframe=white,colback=white,
1778            boxsep=0pt, top=4pt, bottom=4pt},
1779          coltitle=black, %toptitle=9pt, bottomtitle=0pt,
1780          title=\quizexplanationname, fonttitle=\footnotesize\scshape\sffamily,
1781          boxsep=2pt, left=2pt, right=2pt, top=5pt, bottom=2pt, sharp corners]{%
1782      \ifstrempty{#1}
```

```
1783        {\parbox{\marginparwidth-8pt-0.8pt}{\footnotesize\ttfamily Sorry, no answer available}}%
1784        {\parbox{\marginparwidth-8pt-0.8pt}{\footnotesize #1}}%
1785      }%
1786    }%
1787    \askreplycListSet\askreplytpOffsets{#2}%
1788    \edef\askreplytwd{\the\wd\askreplytiptext}%
1789    \edef\askreplytht{\the\ht\askreplytiptext}%
1790    \edef\askreplytdp{\the\dp\askreplytiptext}%
1791    \askreplytipshift=0pt%
1792    %OCG-based (that is, all non-draggable) boxes should not extend beyond the
1793    %current column as they may get overlaid by text in the neighbouring column
1794    %\setlength\askreplywhatsleft{\linegoal}%
1795    %\ifdim\askreplywhatsleft<\dimexpr\askreplytwd+\askreplycListItem\askreplytpOffsets{1}\relax%
1796    %  \setlength\askreplytipshift{\askreplywhatsleft-\twd-\askreplycListItem\askreplytpOffsets{1}}%
1797    %\fi%
1798    \raisebox{\heightof{#1}+\askreplytdp+\askreplycListItem\askreplytpOffsets{2}}[0pt][0pt]{%
1799      \makebox[0pt][l]{%
1800        \hspace{\dimexpr\askreplytipshift+\askreplycListItem\askreplytpOffsets{1}\relax}%
1801        \usebox{\askreplytiptext}%
1802      }%
1803    }%
1804 }
1805
1806 \NewDocumentCommand{\mcqtooltiporiginal}% Simplified version for Evince (and AR and new Okular)
1807   { O{\ifdefined\@linkcolor\@linkcolor\else blue\fi} m O{yellow!20} m O{0pt,0pt} }{%
1808   \leavevmode%
1809   %for variants with two and more stars, put tip box on a PDF Layer (OCG)
1810   \ocgbase@new@ocg{askreplytipOCG.\theaskreplytcnt}{%
1811     /Print<</PrintState/OFF>>/Export<</ExportState/OFF>>%
1812   }{false}%
1813   \xdef\askreplytpTipOcg{\ocgbase@last@ocg}%
1814   %prevent simultaneous visibility of multiple non-draggable tooltips
1815   \ocgbase@add@ocg@to@radiobtn@grp{askreplytool@tips}{\ocgbase@last@ocg}%
1816   \askreplytpPdfLink{%
1817     /Subtype/Link/Border[0 0 0]/A <</S/SetOCGState/State [/Toggle \askreplytpTipOcg]>>
1818   }{\textcolor{#1}{#2}}%
1819   \sbox\askreplytiptext{%
1820     \ocgbase@oc@bdc{\askreplytpTipOcg}%
1821     \ocgbase@open@stack@push{\askreplytpTipOcg}%
1822     %\fcolorbox{black}{#3}{#4}%
1823     \tcbox[colframe=black,colback=#3,size=fbox,arc=1ex,sharp corners=southwest]{#4}%
1824     \ocgbase@oc@emc\ocgbase@open@stack@pop\askreplytpNull%
1825   }%
1826   \askreplycListSet\askreplytpOffsets{#5}%
1827   \edef\askreplytwd{\the\wd\askreplytiptext}%
```

```latex
1828    \edef\askreplyht{\the\ht\askreplytiptext}%
1829    \edef\askreplydp{\the\dp\askreplytiptext}%
1830    \askreplytipshift=0pt%
1831    %OCG-based (that is, all non-draggable) boxes should not extend beyond the
1832    %current column as they may get overlaid by text in the neighbouring column
1833    \setlength\askreplywhatsleft{\linegoal}%
1834    \ifdim\askreplywhatsleft<\dimexpr\askreplytwd+\cListItem\askreplytpOffsets{1}\relax%
1835        \setlength\askreplytipshift{\whatsleft-\twd-\askreplycListItem\askreplytpOffsets{1}}%
1836    \fi%
1837    \raisebox{\heightof{#2}+\askreplytdp+\askreplycListItem\askreplytpOffsets{2}}[0pt][0pt]{%
1838        \makebox[0pt][l]{%
1839            \hspace{\dimexpr\askreplytipshift+\askreplycListItem\askreplytpOffsets{1}\relax}%
1840            \usebox{\askreplytiptext}%
1841        }%
1842    }%
1843    \stepcounter{askreplytcnt}%
1844 }
1845
1846 %- Setting the user level environments (see below in case `assignpoints' package is loaded or not)
1847 %-------------------------------------------------------------------------------------------------
1848
1849 %- LaTeX2e way, see:
1850 %- https://tex.stackexchange.com/questions/9035/[...]
1851 %-    [...]how-to-pass-an-optional-argument-to-an-environment-with-verbatim-content
1852
1853 %- Setting the display of exercise levels: none, basic, intermediate and advanced
1854
1855 \newtoggle{askreply@level@display@on}
1856
1857 \NewDocumentCommand{\askreply@level@display}{  }{
1858    \iftoggle{askreply@level@display@on}{%
1859        \node[xshift=8pt, inner sep=0pt, minimum size=2.5mm, circle, %radius=4mm,
1860            ball color=\asreply@firstlevel@color] (firstlevel) at (frame.east) {};
1861        \node[circle, inner sep=0pt, minimum size=2.5mm, %radius=4mm,
1862            right=1pt of firstlevel, ball color=\asreply@secondlevel@color] (secondlevel) {};
1863        \node[circle, inner sep=0pt, minimum size=2.5mm, %radius=4mm,
1864            right=1pt of secondlevel, ball color=\asreply@thirdlevel@color] (thirdlevel) {};
1865    }{}%\node[xshift=16pt, circle, radius=2pt, ball color=firstcolor] (firstlevel) at (frame.east) {};%
1866 }
1867
1868 \AtBeginEnvironment{exercise}{\small}
1869 \AtBeginEnvironment{quiz}{\small}
1870 \AtBeginEnvironment{solution}{\small}
1871
1872 \newcommand\askreplytikzmark[1]{%
```

```
1873    \tikz[remember picture,overlay]\node (#1) {\phantom{Hg}};%
1874  }
1875  \newlength{\exerciseheight}
1876  %\newlength{\askreply@detect@boxheight}
1877
1878  \newcommand\connect[3]{%
1879  \tikz[remember picture,overlay]
1880    \pgfextracty{\global#1}{\pgfpointanchor{#2}{north}}
1881    \pgfextracty{\pgf@ya}{\pgfpointanchor{#3}{south}}
1882    \pgfmathadd{#1}{\pgf@ya}
1883    \let#1\pgfmathresult
1884    %\setlength{exerciseheight}{\pgfmathresult}
1885    %\addtolength{\exerciseheight}{-\pgf@ya}
1886    \draw[->,red,>=latex] (#2.north) -- (#3.south);%
1887    %Out: \the#1
1888  }
1889  \newcommand\getheightofnode[2]{
1890      \pgfextracty{#1}{\pgfpointanchor{#2}{north}}
1891      \pgfextracty{\pgf@ya}{\pgfpointanchor{#2}{south}}
1892      \addtolength{#1}{-\pgf@ya}
1893  }
1894
1895  \newlength{\parline}
1896  \newlength{\paroutindent}
1897  \newlength{\lineheight}
1898  \setlength{\lineheight}{\heightof{abcdefghijklmnoprstuvwxyz}}
1899
1900  \newcommand{\mycountlines}[1]{%
1901      \setlength{\paroutindent}{\expandafter\parindent}
1902      \setlength{\parline}{\heightof{\noindent\begin{minipage}{\linewidth}%
1903              \setlength{\parindent}{\paroutindent}#1\end{minipage}}}%
1904      \pgfmathparse{round(\parline / (0.9*\lineheight))}
1905      #1\par \noindent \texttt{line count: (\pgfmathresult)}
1906  }
1907
1908  %- https://tex.stackexchange.com/questions/402779/[...]
1909  %-     [...]how-can-i-calculate-a-number-of-lines-needed-to-fit-the-text/
1910  \newcounter{askreplycountlines}
1911  \newcommand{\askreplynumberoflines}[2][\linewidth]{% #1=width (optional), #2=text
1912    \bgroup
1913    \hsize=#1\relax
1914    \clubpenalty=0
1915    \widowpenalty=0
1916    \displaywidowpenalty=0
1917    \predisplaypenalty=0
```

```latex
1918    \postdisplaypenalty=0
1919    \interlinepenalty=0
1920    \setbox0=\vbox{#2}%
1921    \setcounter{askreplycountlines}{0}%
1922    \loop\ifdim\ht0>0pt
1923      \stepcounter{askreplycountlines}%
1924      \setbox1=\vsplit0 to 0pt
1925    \repeat
1926 \egroup}% \theaskreplycountlines
1927
1928 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1929 %------ Typical usage
1930 %-
1931 %- Exercise environment
1932 %---------------------
1933 %- \begin{exercise}[<options comma separated>]
1934 %-   Stuff...
1935 %-   \begin{subexercise}[<tcolorbox options>]{<optional title>}
1936 %-     Stuff...
1937 %-   \end{subexercise}
1938 %-   \begin{subexercise}[<tcolorbox options>]{<optional title>}
1939 %-     Stuff...
1940 %-   \end{subexercise}
1941 %-   Stuff...
1942 %- \end{exercise}
1943 %- Options: display=true/false (default=true) ; storing=true/false (default=true)
1944 %-          list=true/false (default=true) adding a entry in the list of exercises
1945 %-          title={<optional title>} (no default), before skip=<length>, after skip=<length>,
1946 %-          level=<basic>/<intermediate>/<advanced> (no default)
1947 %-
1948 %- Solution environment
1949 %---------------------
1950 %- \begin{solution}[<options comma separated>]
1951 %-   Stuff...
1952 %-   \begin{subsolution}[<tcolorbox options>]
1953 %-     Stuff...
1954 %-   \end{subsolution}
1955 %-   \begin{subsolution}[<tcolorbox options>]
1956 %-     Stuff...
1957 %-   \end{subsolution}
1958 %-   Stuff...
1959 %- \end{solution}
1960 %- Options: display=true/false (default=true) ; storing=true/false (default=true)
1961 %-          ID=<number of the exercise> (no default), before skip=<length>, after skip=<length>
1962 %- The solution ID number is automatically set in the sequence of the exercises. But in case
```

```
1963 %- an exercise has no solution, one must restart the sequence with the correct ID number.
1964 %-
1965 %- Quiz environment
1966 %-----------------
1967 %- \begin{quiz}[<options comma separated>]
1968 %- \begin{quizquestion}<#1>[#2]{#3}{#4}{#5}(#6)<#7> (see below)
1969 %-    \mcqprosal{stuff}
1970 %-    etc.
1971 %- \end{quizquestion}
1972 %- \begin{quizquestion*}<#1>[#2]{#3}{#4}{#5}(#6)<#7> (see below)
1973 %-    \mcqprosal{stuff}
1974 %-    etc.
1975 %- \end{quizquestion*}
1976 %- \end{quiz}
1977 %- Options: display=true/false (default=true) ; storing=true/false (default=true)
1978 %-          list=true/false (default=true) adding a entry in the list of quizzes
1979 %-          title={<optional title>} (no default), before skip=<length>, after skip=<length>
1980 %-
1981 %- Quizquestion environment (multiple answers)
1982 %-------------------------------------------
1983 %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
1984 %         [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
1985 %         {#3} = Mandatory correct answer numbers comma separated
1986 %         {#4} = Mandatory wrong answer numbers comma separated
1987 %         {#5} = Optional title
1988 %         (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
1989 %         <#7> = Optional explanation text of the answer (usually given ;-)
1990 %- \begin{quizquestion}<#1>[#2]{#3}{#4}{#5}(#6)<#7>
1991 %-    \mcqproposal{stuff-one}
1992 %-    \mcqproposal{stuff-two}
1993 %-    \mcqproposal{stuff-three}
1994 %-    \mcqproposal{stuff-four}
1995 %-    etc.
1996 %- \end{quizquestion}
1997 %-
1998 %- Quizquestion* environment (single exclusive answer)
1999 %---------------------------------------------------
2000 %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
2001 %         [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
2002 %         {#3} = Mandatory correct answer number (only one)
2003 %         {#4} = Mandatory wrong answer numbers comma separated
2004 %         {#5} = Optional title
2005 %         (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
2006 %         <#7> = Optional explanation text of the answer (usually given ;-)
2007 %- \begin{quizquestion*}<#1>[#2]{#3}{#4}{#5}(#6)<#7>
```

```
2008  %-     \mcqproposal{stuff-one>}
2009  %-     \mcqproposal{stuff-two>}
2010  %-     \mcqproposal{stuff-three>}
2011  %-     \mcqproposal{stuff-four>}
2012  %-     etc.
2013  %- \end{quizquestion*}
2014  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
2015
2016  \iftoggle{askreply@points}{% With `assignpoints' package
2017    %
2018    %- Exercise environment
2019    %----------------------
2020    \RenewDocumentEnvironment{exercise}{  }{%
2021      \catcode`\^^M=\active
2022      \@ifnextchar[%
2023        {\catcode`\^^M=5 \exercise@start}
2024        {\catcode`\^^M=5 \exercise@start[]}
2025    }{%
2026      \endVerbatimOut%
2027      %\VerbatimInput{\askreply@outfilename}%
2028      %\settototalheight{\askreply@detect@boxheight}{%
2029      %  \parbox{\linewidth}{%
2030      %    \input{\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}
2031      %  }%
2032      %}
2033      \ifaskreply@display
2034        \ifdefstring{\askreply@level}{basic}%
2035          {%
2036            \toggletrue{askreply@level@display@on}%
2037            \gdef\asreply@firstlevel@color{askreplythirdcolor}%
2038            \gdef\asreply@secondlevel@color{lightgray}%
2039            \gdef\asreply@thirdlevel@color{lightgray}%
2040            %\marginnote{level=basic}%
2041          }%
2042          {\ifdefstring{\askreply@level}{intermediate}%
2043            {%
2044              \toggletrue{askreply@level@display@on}%
2045              \gdef\asreply@firstlevel@color{lightgray}%
2046              \gdef\asreply@secondlevel@color{askreplythirdcolor}%
2047              \gdef\asreply@thirdlevel@color{lightgray}%
2048              %\marginnote{level=intermediate}%
2049            }%
2050            {\ifdefstring{\askreply@level}{advanced}%
2051              {%
2052                \toggletrue{askreply@level@display@on}%
```

61

```
2053            \gdef\asreply@firstlevel@color{lightgray}%
2054            \gdef\asreply@secondlevel@color{lightgray}%
2055            \gdef\asreply@thirdlevel@color{askreplythirdcolor}%
2056            %\marginnote{level=advanced}%
2057          }%
2058          {}%\marginnote{level=none}}%
2059        }%
2060      }%
2061    \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip]
2062      % Empty versus non-empty exercise title
2063      \iftoggle{assignpoints@checkemptystring}%
2064        {\strut\textsf{\lightbf{\normalsize\exercisename\space\currentexercisenumber}}%
2065          \hfill\textsf{\lightbf{\small\displaypoints*[exercise]{\currentexercisenumber}}}}%
2066        }%
2067        {\strut\textsf{\lightbf{\normalsize\scshape\exercisename\space\currentexercisenumber}}%
2068          \textsf{\lightbf{\normalsize\scshape\enspace\textemdash\enspace\currentexercisetitle}}%
2069          \hfill\textsf{\lightbf{%
2070            \small\scshape\displaypoints*[exercise]{\currentexercisenumber}}}%
2071        }%
2072    \end{tcolorbox}\nobreak%\nopagebreak?
2073    \askreplybox
2074      \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{askreplyfirstcolor}}%
2075        \input{\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2076        \askreplynumberoflines{%
2077          \let\pointsoriginal\points% Not to count points twice
2078          \let\points\phantom%
2079          \input{\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2080          \let\points\pointsoriginal
2081        }%
2082        %NoL: \theaskreplycountlines
2083        \par\phantomtext%
2084        %\vspace{-.5\baselineskip}%
2085        \ifdefempty{\solutionID}%
2086          {\ifnumequal{\theaskreplycountlines}{1}{\par\vspace{-0.6\baselineskip}}{}}%
2087          {\par\hfill\raisebox{-2.5pt}{%
2088              \textcolor{askreplysecondcolor}{%
2089                %SolutionID: \solutionID\quad%
2090                \itshape\footnotesize{\normalfont\faSquare}%
2091                  \enspace Solution\space page~\pageref{solution:\solutionID}%
2092                  %\enspace Solution page~\pageref{solution:\theexercise}%
2093            }}%
2094          }%
2095      \endtikzpagelayer
2096      %\par\vspace{\dimexpr.5\baselineskip\relax}%
2097    \endaskreplybox
```

```latex
2098        %\zsaveposy{stopexercise}
2099        %Space: \the\dimexpr\zposy{startexercise}sp-\zposy{stopexercise}sp\relax
2100        \vspace{\askreply@afterskip}%
2101      \fi
2102      \ifaskreply@storing
2103        \ifx\askreply@title\empty%
2104          \askreply@filecopytoenv%
2105            {
  \askreply@outfilename}%{\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2106            {\exercisesdir\jobname-exercise-\askreplytwodigits{\theexercise}.env}%
2107            {\string\begin{exercise}}%
2108            {\string\end{exercise}}%
2109            {\string[storing=false]}%
2110        \else
2111          \askreply@filecopytoenv%
2112            {\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2113            {\exercisesdir\jobname-exercise-\askreplytwodigits{\theexercise}.env}%
2114            {\string\begin{exercise}}%
2115            {\string\end{exercise}}%
2116            {\string[storing=false, title=\askreply@title]}%
2117        \fi
2118      \fi
2119      \ifaskreply@list
2120        \addcontentsline{loe}{exercise}{\protect\numberline{\theexercise}\currentexercisetitle}%
2121      \fi
2122      \setcounter{assignpoints@maxsubexercisecount}{\theassignpoints@subexercisecount}%
2123      \assignpoints@storevaluetoaux%
2124        {\assignpointsprefix{exercise}@exercisetitle}%
2125        {\theassignpoints@exercisecount}%
2126        {\currentexercisetitle}%
2127      \assignpoints@storevaluetoaux%
2128        {\assignpointsprefix{exercise}@numberofsubexercises}%
2129        {\theassignpoints@exercisecount}%
2130        {\theassignpoints@maxsubexercisecount}%
2131      \assignpoints@storevaluetoaux%
2132        {\assignpointsprefix{exercise}@points}%
2133        {\theassignpoints@exercisecount}%
2134        {\strip@pt\assignpoints@currentexercisepoints}% https://tex.stackexchange.com/questions/2810/
2135      \global\boolfalse{assignpoints@inexercise}%
2136      \togglefalse{assignpoints@checkemptystring}%
2137      \togglefalse{askreply@level@display@on}%
2138    }
2139    \def\exercise@start[#1]{%
2140      \pgfkeys{/askreply/.cd, #1}%
2141      \ifbool{assignpoints@inexercise}%
```

```latex
2142        {\PackageError{assignpoints}{You cannot nest exercise environments}}%
2143        {}%
2144      \ifbool{assignpoints@exercise@layoutdefined}{}{%
2145        \PackageError{assignpoints}%
2146          {Option `customlayout' requires you to define an exercise layout using
2147           at least `\string\AtBeginExercise{...}'}%
2148      }%
2149      \global\booltrue{assignpoints@inexercise}%
2150      \stepcounter{exercise}%
2151      \getenvID[exercise]{\theexercise}%
2152      \getenvID[solution]{\theexercise}%
2153      \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2154      %\label{exercise:\theassignpoints@exercisecount}
2155      \phantomsection\label{exercise:\theexercise}% To have correct \pageref link (see TeX.SX/49061)
2156      \setlength{\assignpoints@currentexercisepoints}{0pt}%
2157      \global\assignpoints@currentexercisepoints=\assignpoints@currentexercisepoints%
2158      \ifx\askreply@title\@empty% WORKS!
2159        %\textbf{TRUE}
2160        \toggletrue{assignpoints@checkemptystring}%
2161      \else%
2162        %\textbf{FALSE}
2163        \togglefalse{assignpoints@checkemptystring}%
2164        \renewcommand{\currentexercisetitle}{\askreply@title}%
2165      \fi%
2166      %\renewcommand{\currentexercisetitle}{\askreply@title}%
2167      %\ifstrempty{\currentexercisetitle}% DOES NOT WORK! WHY?
2168      %   {\toggletrue{assignpoints@checkemptystring}\textbf{TRUE}}%
2169      %   {\togglefalse{assignpoints@checkemptystring}\textbf{FALSE}}%
2170      %\ifnum\c@exercise=0
2171      %   \setcounter{assignpoints@exercisecount}{0}% Exercise 0 is for example
2172      %   \setcounter{assignpoints@totalexercisecount}{0}%
2173      %\else
2174        \stepcounter{assignpoints@exercisecount}% Starting the numbering from "1"
2175        \stepcounter{assignpoints@totalexercisecount}%
2176      %\fi
2177      \ifcsname assignpoints@exercise@numberofsubexercises@\currentexercisenumber\endcsname%
2178        \renewcommand{\numberofsubexercises}{%
2179          \assignpoints@readvaluefromaux{exercise}{numberofsubexercises@\currentexercisenumber}}%
2180      \fi%
2181      \ifx\askreply@envsymbol\@empty%
2182        \renewcommand{\envsymbol}{%
2183          \normalfont\faIcon{laptop-code}}% \faIcon{feather-alt}} \faPenFancy \faMarker
2184      \else%
2185        \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2186      \fi%
```

```latex
2187    \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2188    \def\askreply@outfilename{%
2189      \exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2190    \VerbatimOut{\askreply@outfilename}%
2191  }
2192  \NewDocumentEnvironment{exercise*}{ o }{% Solely (no reference) or demonstration exercise
2193    \pgfkeys{/askreply/.cd, #1}%
2194    \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2195    \ifx\askreply@title\@empty% WORKS!
2196      \toggletrue{assignpoints@checkemptystring}%
2197    \else
2198      \togglefalse{assignpoints@checkemptystring}%
2199      \renewcommand{\currentexercisetitle}{\askreply@title}%
2200    \fi
2201    \ifx\askreply@envsymbol\@empty
2202      \renewcommand{\envsymbol}{%
2203        \normalfont\faIcon{laptop-code}}% |faIcon{feather-alt}} |faPenFancy |faMarker
2204    \else
2205      \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2206    \fi
2207    \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2208    \ifdefstring{\askreply@level}{basic}%
2209      {%
2210        \toggletrue{askreply@level@display@on}%
2211        \gdef\asreply@firstlevel@color{askreplythirdcolor}%
2212        \gdef\asreply@secondlevel@color{lightgray}%
2213        \gdef\asreply@thirdlevel@color{lightgray}%
2214      }%
2215      {\ifdefstring{\askreply@level}{intermediate}%
2216        {%
2217          \toggletrue{askreply@level@display@on}%
2218          \gdef\asreply@firstlevel@color{lightgray}%
2219          \gdef\asreply@secondlevel@color{askreplythirdcolor}%
2220          \gdef\asreply@thirdlevel@color{lightgray}%
2221        }%
2222        {\ifdefstring{\askreply@level}{advanced}%
2223          {%
2224            \toggletrue{askreply@level@display@on}%
2225            \gdef\asreply@firstlevel@color{lightgray}%
2226            \gdef\asreply@secondlevel@color{lightgray}%
2227            \gdef\asreply@thirdlevel@color{askreplythirdcolor}%
2228          }%
2229          {}% level=none
2230        }%
2231      }%
```

65

```latex
2232      \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip]
2233        % Empty versus non-empty exercise title
2234        \iftoggle{assignpoints@checkemptystring}%
2235          {\strut\textsf{\textsc{\lightbf{%
2236            \normalsize\exercisename\hfill{\small\askreply@editpoints}}}}}%
2237          {\strut\textsf{\textsc{\lightbf{%
2238            \normalsize\currentexercisetitle\hfill{\small\askreply@editpoints}}}}}%
2239      \end{tcolorbox}\nobreak%\nopagebreak?
2240      \askreplybox%
2241        \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{askreplyfirstcolor}}%
2242          \small
2243  }{%
2244        \par\phantomtext%
2245        %\par\vspace{-0.5\baselineskip}%
2246      \endtikzpagelayer
2247      %\par\vspace{\baselineskip}%
2248      \endaskreplybox
2249      \vspace{\askreply@afterskip}%
2250      \togglefalse{assignpoints@checkemptystring}%
2251      \togglefalse{askreply@level@display@on}%
2252  }
2253  %
2254  %- Subexercise environment
2255  %------------------------
2256  \AtBeginSubexercise{\begin{tcolorbox}[subexercisepoints]}
2257  \AtEndSubexercise{\end{tcolorbox}}
2258  \RenewDocumentEnvironment{subexercise}{ O{} }{%
2259    \pgfkeys{/askreply/.cd, #1}%
2260    \ifbool{assignpoints@insubexercise}%
2261      {\PackageError{assignpoints}{You cannot nest subexercise environments}}%
2262      {}%
2263    \ifbool{assignpoints@subexercise@layoutdefined}{}{%
2264      \PackageError{assignpoints}{Option `customlayout' requires you to define a subexercise
2265                                  layout using at least `\string\AtBeginSubexercise{...}'}
2266    }%
2267    \global\booltrue{assignpoints@insubexercise}%
2268    \setlength{\assignpoints@currentsubexercisepoints}{0pt}%
2269    \global\assignpoints@currentsubexercisepoints=\assignpoints@currentsubexercisepoints%
2270    \ifx\askreply@title\@empty
2271      \toggletrue{assignpoints@checkemptystring}%
2272    \else
2273      \togglefalse{assignpoints@checkemptystring}%
2274      \renewcommand{\currentsubexercisetitle}{\askreply@title}%
2275    \fi
2276    \stepcounter{assignpoints@subexercisecount}% Starting the numbering from "1"
```

```latex
2277        \exercisepoints@sub@begin%
2278        %\begin{tcolorbox}[subexercisepoints, #1]
2279    }{%
2280        %\end{tcolorbox}%
2281        \exercisepoints@sub@end%
2282        \assignpoints@storevaluetoaux%
2283          {\assignpointsprefix{subexercise}@title}%
2284          {\theassignpoints@exercisecount.\theassignpoints@subexercisecount}%
2285          {\currentsubexercisetitle}%
2286        \assignpoints@storevaluetoaux%
2287          {\assignpointsprefix{exercise}@points}%
2288          {\theassignpoints@exercisecount.\theassignpoints@subexercisecount}%
2289          {\strip@pt\assignpoints@currentsubexercisepoints}% https://tex.stackexchange.com/questions/2810/
2290        \global\boolfalse{assignpoints@insubexercise}%
2291        \togglefalse{assignpoints@checkemptystring}%
2292    }
2293    %
2294    %- Solution environment
2295    %---------------------
2296    \RenewDocumentEnvironment{solution}{  }{%
2297        \catcode`\^^M=\active
2298        \@ifnextchar[%
2299            {\catcode`\^^M=5 \solution@start}
2300            {\catcode`\^^M=5 \solution@start[]}
2301    }{%
2302        \endVerbatimOut%
2303        %\VerbatimInput{\askreply@outfilename}%
2304        \ifaskreply@display
2305          %\vspace{\askreply@beforeskip}%
2306          \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
2307                            colback=askreplysecondcolor!75!black, colframe=askreplysecondcolor]
2308          % Empty versus non-empty solution title
2309          \ifstrempty{\currentexercisetitle}%
2310            {\strut\textsf{\lightbf{%
2311              \normalsize\scshape\solutionname\space\theassignpoints@solutioncount\space}}%
2312              \hfill{\small(\exercisenamenocap\space\hyperlink{\exerciseID}{\thesolution},\space%
2313              page\space\pageref{exercise:\thesolution})}%
2314            }%
2315            {\strut\textsf{\lightbf{%
2316              \normalsize\scshape\solutionname\space\theassignpoints@solutioncount\space}}%
2317              \textsf{\lightbf{%
2318                \normalsize\scshape\enspace\textemdash\enspace\currentexercisetitle\space}}%
2319              \textsf{\lightbf{\enspace{\small(page\space\pageref{exercise:\thesolution})}}}%
2320              \hfill\textsf{\lightbf{\small\scshape%
2321                \displaypoints*[exercise]{\theassignpoints@solutioncount}}}%
```

```
2322           }%
2323       \end{tcolorbox}\nobreak%\nopagebreak?
2324       \askreplybox%
2325         \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{askreplysecondcolor}}%
2326           \input{\exercisesdir\jobname-solution-body-\askreplytwodigits{\thesolution}.ltx}
2327           \askreplynumberoflines{\input{\askreply@outfilename}}%
2328           %NoL: |theaskreplycountlines
2329           \ifnumequal{\theaskreplycountlines}{1}{\par\vspace{0.4\baselineskip}}{}%
2330           \par\phantomtext%
2331         \endtikzpagelayer
2332       \endaskreplybox
2333       \vspace{\askreply@afterskip}%
2334     \fi
2335     \ifaskreply@storing
2336       \askreply@filecopytoenv%
2337         {\exercisesdir\jobname-solution-body-\askreplytwodigits{\thesolution}.ltx}%
2338         {\exercisesdir\jobname-solution-\askreplytwodigits{\thesolution}.env}%
2339         {\string\begin{solution}}%
2340         {\string\end{solution}}%
2341         {\string[storing=false]}%
2342     \fi
2343     %|ifx|askreply@ID|empty%
2344       \askreply@storevaluetoaux{exercise@solutionID}{\thesolution}{ID:\thesolution}%
2345     %|else
2346     %   |askreply@storevaluetoaux{exercise@solutionID}{|askreply@ID}{ID:|askreply@ID}%
2347     %|fi
2348     \global\boolfalse{assignpoints@insolution}%
2349   }
2350   \def\solution@start[#1]{%
2351     \pgfkeys{/askreply/.cd, #1}%
2352     \ifbool{assignpoints@insolution}%
2353       {\PackageError{assignpoints}{You cannot nest solution environments}}%
2354       {}%
2355     \ifbool{assignpoints@solution@layoutdefined}{}{%
2356       \PackageError{assignpoints}%
2357         {Option `customlayout' requires you to define an solution layout using
2358         at least `\string\AtBeginSolution{...}'}%
2359     }%
2360     \global\booltrue{assignpoints@insolution}%
2361     \ifx\askreply@ID\empty%
2362       %|ifnumequal{|value{solution}}{|value{exercise}}%
2363       %   {|setcounter{solution}{|value{exercise}}}%
2364       %   {%
2365       %     |ifnumless{|value{solution}}{|value{exercise}}%
2366       %       {|setcounter{solution}{|value{exercise}}}%
```

```
2367     %         {\PackageWarning{askreply}{The solution counter must be set with ID}}%
2368     %   }%
2369     %\getenvID[exercise]{\thesolution}%
2370     \stepcounter{solution}%
2371     \getenvID[solution]{\thesolution}%
2372   \else
2373     %\getenvID[exercise]{\thesolution}%
2374     \setcounter{solution}{\askreply@ID}%
2375     \getenvID[solution]{\thesolution}%
2376   \fi
2377   \stepcounter{solutionnumber}%
2378   \hypersetup{unicode, pdfborder=0 0 0, linkcolor=white}%
2379   %\hypertarget{\solutionID}{}%
2380   \phantomsection\label{solution:\solutionID}%
2381   \ifx\askreply@envsymbol\@empty
2382     \renewcommand{\envsymbol}{\normalfont\faLightbulb}%
2383   \else
2384     \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2385   \fi
2386   \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2387   %\par\vspace{\baselineskip}
2388   \ifbool{assignpoints@inexercise}
2389     {\setcounter{assignpoints@solutioncount}{\theassignpoints@exercisecount}}%
2390     {\setcounter{assignpoints@solutioncount}{\thesolution}}
2391   %- Adding a "hard" solution reference (not a label but having the same functionality)
2392   %- The aim is to have control on the display if there is no reference
2393   \assignpoints@storevaluetoaux%
2394     {\assignpointsprefix{solution}@reference}%
2395     {\theassignpoints@solutioncount}%
2396     {\theassignpoints@solutioncount}%
2397   \gettitle[exercise]{\theassignpoints@solutioncount}%
2398   \def\askreply@outfilename{%
2399     \exercisesdir\jobname-solution-body-\askreplytwodigits{\thesolution}.ltx}%
2400   \VerbatimOut{\askreply@outfilename}%
2401 }
2402 \NewDocumentEnvironment{solution*}{ o }{% Solely (no reference) or demonstration exercise
2403   \pgfkeys{/askreply/.cd, #1}%
2404   \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2405   \ifx\askreply@title\@empty% WORKS!
2406     \toggletrue{assignpoints@checkemptystring}%
2407   \else
2408     \togglefalse{assignpoints@checkemptystring}%
2409     \renewcommand{\currentexercisetitle}{\askreply@title}%
2410   \fi
2411   \ifx\askreply@envsymbol\@empty
```

```
2412        \renewcommand{\envsymbol}{\normalfont\faLightbulb}%
2413      \else
2414        \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2415      \fi
2416      \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2417      \ifdefstring{\askreply@level}{basic}%
2418        {%
2419          \toggletrue{askreply@level@display@on}%
2420          \gdef\asreply@firstlevel@color{askreplythirdcolor}%
2421          \gdef\asreply@secondlevel@color{lightgray}%
2422          \gdef\asreply@thirdlevel@color{lightgray}%
2423        }%
2424        {\ifdefstring{\askreply@level}{intermediate}%
2425          {%
2426            \toggletrue{askreply@level@display@on}%
2427            \gdef\asreply@firstlevel@color{lightgray}%
2428            \gdef\asreply@secondlevel@color{askreplythirdcolor}%
2429            \gdef\asreply@thirdlevel@color{lightgray}%
2430          }%
2431          {\ifdefstring{\askreply@level}{advanced}%
2432            {%
2433              \toggletrue{askreply@level@display@on}%
2434              \gdef\asreply@firstlevel@color{lightgray}%
2435              \gdef\asreply@secondlevel@color{lightgray}%
2436              \gdef\asreply@thirdlevel@color{askreplythirdcolor}%
2437            }%
2438            {}% level=none
2439          }%
2440        }%
2441      \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
2442                    colback=askreplysecondcolor!75!black, colframe=askreplysecondcolor]
2443      %\begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip]
2444        % Empty versus non-empty exercise title
2445        \iftoggle{assignpoints@checkemptystring}%
2446          {\strut\textsf{\textsc{\lightbf{%
2447            \solutionname\hfill{\small\askreply@editpoints}}}}}%
2448          {\strut\textsf{\textsc{\lightbf{%
2449            \currentexercisetitle\hfill{\small\askreply@editpoints}}}}}%
2450      \end{tcolorbox}\nobreak%\nopagebreak?
2451      \askreplybox%
2452        \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{askreplyfirstcolor}}%
2453          \small
2454  }{%
2455          \par\phantomtext%
2456          %\vspace{-.5\baselineskip}%
```

```latex
2457        \endtikzpagelayer
2458        %\par\vspace{\dimexpr.5\baselineskip\relax}%
2459        \endaskreplybox
2460        \vspace{\askreply@afterskip}%
2461        \togglefalse{assignpoints@checkemptystring}%
2462        \togglefalse{askreply@level@display@on}%
2463    }
2464    %- Subsolution environment
2465    %------------------------
2466    \AtBeginSubsolution{\begin{tcolorbox}[subsolutionpoints]}
2467    \AtEndSubsolution{\end{tcolorbox}}
2468    \RenewDocumentEnvironment{subsolution}{ O{} }{%
2469        \ifbool{assignpoints@insubsolution}%
2470            {\PackageError{assignpoints}{You cannot nest `subsolution' environments}}%
2471            {}%
2472        \ifbool{assignpoints@subsolution@layoutdefined}{}{%
2473            \PackageError{assignpoints}%
2474                {Option `customlayout' requires you to define an `subsolution' layout using
2475                at least `\string\AtBeginSubsolution{...}'}%
2476        }%
2477        \global\booltrue{assignpoints@insubsolution}%
2478        \stepcounter{assignpoints@subsolutioncount}%
2479        \gettitle[subexercise]{\theassignpoints@solutioncount.\theassignpoints@subsolutioncount}%
2480        \solutionpoints@subsolution@begin
2481        %\begin{tcolorbox}[subsolutionpoints, #1]
2482    }{%
2483        %\end{tcolorbox}%
2484        \solutionpoints@subsolution@end%
2485        \global\boolfalse{assignpoints@insubsolution}%
2486    }
2487    %- Quiz environment
2488    %------------------
2489    \RenewDocumentEnvironment{quiz}{ }{%
2490        \catcode`\^^M=\active
2491        \@ifnextchar[%
2492        {\catcode`\^^M=5 \quiz@start}
2493        {\catcode`\^^M=5 \quiz@start[]}
2494    }{%
2495        \endVerbatimOut%
2496        %\VerbatimInput{\askreply@outfilename}%
2497        \ifaskreply@display
2498            \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
2499                            colupper=askreplysecondcolor, colback=black!15, colframe=black!50]
2500            % Empty versus given quiz title
2501            \iftoggle{assignpoints@checkemptystring}%
```

```latex
          {\strut\lightbf{\sffamily\quizname\space\currentquiznumber}%
              \hfill{\small\normalfont\sffamily\displaypoints*[quiz]{\currentquiznumber}}%
          }%
          {\strut\textsf{\lightbf{\normalsize\scshape\quizname\space\currentquiznumber\space}}%
              \textsf{\lightbf{\normalsize\scshape\enspace\textemdash\enspace\currentquiztitle}}%
              \hfill\textsf{\lightbf{\small\scshape%
                \displaypoints*[quiz]{\currentquiznumber}}}%
          }%
      \end{tcolorbox}\nobreak%\nopagebreak?
      \askreplybox%
        %\vspace{-.5\baselineskip}
        \tikzpagelayer{\@askreplytikzquizframebox{askreplyframedbox, fill=white, draw=black!50}}%
          \input{\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
          \askreplynumberoflines{% Not to count the points twice
            \let\pointsoriginal\points
            \let\points\phantom%
            \input{\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
            \let\points\pointsoriginal
          }%
          %NoL: \theaskreplycountlines
          %\askreplynumberoflines{\input{\askreply@outfilename}}%
          \par\phantomtext%
          \ifnumgreater{\theaskreplycountlines}{1}{}{\par\vspace{-0.6\baselineskip}}%
        \endtikzpagelayer
        %\par\vspace{\dimexpr.5\baselineskip\relax}%
      \endaskreplybox
      \vspace{\askreply@afterskip}%
    \fi
    \ifaskreply@storing
      \ifx\askreply@title\empty%
        \askreply@filecopytoenv%
          {\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
          {\quizzesdir\jobname-quiz-\askreplytwodigits{\thequiz}.env}%
          {\string\begin{quiz}}%
          {\string\end{quiz}}%
          {\string[storing=false]}%
      \else
        \askreply@filecopytoenv%
          {\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
          {\quizzesdir\jobname-quiz-\askreplytwodigits{\thequiz}.env}%
          {\string\begin{quiz}}%
          {\string\end{quiz}}%
          {\string[storing=false, title={\askreply@title}]}%
      \fi
    \fi
```

```latex
2547    \assignpoints@storevaluetoaux%
2548      {\assignpointsprefix{quiz}@quiztitle}%
2549      {\theassignpoints@quizcount}%
2550      {\currentquiztitle}%
2551    \assignpoints@storevaluetoaux%
2552      {\assignpointsprefix{quiz}@points}%
2553      {\theassignpoints@quizcount}%
2554      {\strip@pt\assignpoints@currentquizpoints}% https://tex.stackexchange.com/questions/2810/
2555    \askreply@storevaluetoaux{quiz@quizID}{\thequiz}{ID:\thequiz}%
2556    %\askreply@storevaluetoaux{quiz@quiztitle}{\thequiz}{\currentquiztitle}%
2557    %\togglefalse{assignpoints@checkemptystring}%
2558    \global\boolfalse{assignpoints@inquiz}%
2559    \togglefalse{assignpoints@checkemptystring}%
2560    \ifaskreply@list
2561      \addcontentsline{loq}{quiz}{\protect\numberline{\thequiz}\currentquiztitle}%
2562    \fi
2563  }
2564  \def\quiz@start[#1]{%
2565    \pgfkeys{/askreply/.cd, #1}%
2566    \ifbool{assignpoints@inquiz}%
2567      {\PackageError{assignpoints}{You cannot nest quiz environments}}%
2568      {}%
2569    \ifbool{assignpoints@quiz@layoutdefined}{}{%
2570      \PackageError{assignpoints}%
2571        {Option `customlayout' requires you to define a quiz layout using
2572        at least `\string\AtBeginQuiz{...}'}%
2573    }%
2574    \global\booltrue{assignpoints@inquiz}%
2575    \stepcounter{quiz}%
2576    \getenvID[quiz]{\thequiz}%
2577    %\getenvID[answer]{\thequiz}%
2578    \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2579    \phantomsection\label{quiz:\thequiz}% To have correct \pageref link (see TeX.SX/49061)
2580    \setlength{\assignpoints@currentquizpoints}{0pt}%
2581    \global\assignpoints@currentquizpoints=\assignpoints@currentquizpoints%
2582    \ifx\askreply@title\@empty% WORKS!
2583      %\textbf{TRUE}
2584      \toggletrue{assignpoints@checkemptystring}%
2585    \else
2586      %\textbf{FALSE}
2587      \togglefalse{assignpoints@checkemptystring}%
2588      \renewcommand{\currentquiztitle}{\askreply@title}%
2589    \fi
2590    \stepcounter{assignpoints@quizcount}%
2591    \stepcounter{assignpoints@totalquizcount}%
```

```latex
2592    \ifcsname assignpoints@quiz@numberofquestions@\currentquiznumber\endcsname%
2593      \renewcommand{\numberofquestions}{%
2594        \assignpoints@readvaluefromaux{quiz}{numberofquestions@\currentquiznumber}}%
2595    \fi
2596    \ifx\askreply@envsymbol\@empty
2597      \renewcommand{\envsymbol}{\normalfont\faList}%
2598    \else
2599      \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2600    \fi
2601    \settowidth{\envsymbolwidth}{\large\envsymbol}%
2602    \def\askreply@outfilename{\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
2603    \VerbatimOut{\askreply@outfilename}%
2604  }
2605  \NewDocumentEnvironment{quiz*}{ o }{% Solely (no reference) or demonstration exercise
2606    \pgfkeys{/askreply/.cd, #1}%
2607    \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2608    \stepcounter{quizdemo}
2609    \ifx\askreply@title\@empty% WORKS!
2610      \toggletrue{assignpoints@checkemptystring}%
2611    \else
2612      \togglefalse{assignpoints@checkemptystring}%
2613      \renewcommand{\currentquiztitle}{\askreply@title}%
2614    \fi
2615    \ifx\askreply@envsymbol\@empty
2616      \renewcommand{\envsymbol}{\normalfont\faList}%
2617    \else
2618      \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2619    \fi
2620    \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2621    \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
2622                    colupper=askreplysecondcolor, colback=black!15, colframe=black!50]
2623    % Empty versus non-empty quiz title
2624    \iftoggle{assignpoints@checkemptystring}%
2625      {\strut\textsf{\textsc{\lightbf{\quizname\hfill\small\askreply@editpoints}}}}%
2626      {\strut\textsf{\textsc{\lightbf{\quizname\space\@Alph{\thequizdemo}%
2627        \enspace\textemdash\enspace\currentquiztitle\hfill{\small\askreply@editpoints}}}}}%
2628      }%
2629    \end{tcolorbox}\nobreak%\nopagebreak?
2630    \askreplybox
2631    %\vspace{-.5\baselineskip}
2632    \tikzpagelayer{\@askreplytikzquizframebox{askreplyframedbox, fill=white, draw=black!50}}
2633      \small
2634  }{%
2635      \par\phantomtext%
2636    \endtikzpagelayer
```

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```
2637        \par\vspace{\dimexpr.5\baselineskip\relax}%
2638        \endaskreplybox
2639        \vspace{\askreply@afterskip}%
2640        \togglefalse{assignpoints@checkemptystring}%
2641     }
2642  %- Quizquestion environment (multiple answers)
2643  %-------------------------------------------
2644  %- Usage – <#1> = Optional way to display the answer, in the margin (default) or as tooltip
2645  %          [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
2646  %          {#3} = Mandatory correct answer numbers comma separated
2647  %          {#4} = Mandatory wrong answer numbers comma separated
2648  %          {#5} = Optional title
2649  %          (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
2650  %          <#7> = Optional explanation text of the answer (usually given ;-)
2651  \RenewDocumentEnvironment{quizquestion}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
2652     {
2653        \stepcounter{quizquestion}%
2654        \label{quizquestion:\thequiz.\thequizquestion}%
2655        \ifbool{assignpoints@inquizquestion}%
2656          {\PackageError{assignpoints}{You cannot nest quizquestion environments}}%
2657          {}%
2658        \global\booltrue{assignpoints@inquizquestion}%
2659        \setlength{\assignpoints@currentquizquestionpoints}{0pt}%
2660        \global\assignpoints@currentquizquestionpoints=\assignpoints@currentquizquestionpoints%
2661        \renewcommand{\currentquizquestiontitle}{#5}%
2662        \ifstrempty{#5}%
2663          {\toggletrue{assignpoints@checkemptystring}}%
2664          {\togglefalse{assignpoints@checkemptystring}}%
2665        \stepcounter{assignpoints@quizquestioncount}%
2666        \let\mcqproposal\mcqproposalMultiple%
2667        \setcounter{mcqtrialnumber}{-1}
2668        \begin{tcolorbox}[quizquestionpoints]
2669     }
2670     {
2671        \mcqverify{#3}{#4}\hspace{0.1\linewidth}%
2672        \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
2673          {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
2674          {\ifstrequal{#1}{margin}%
2675            {\mcqdisplayanswer[#2]{#7}(#6)}% Display answer in the margin
2676            {\ifstrequal{#1}{tooltip}%
2677              {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
2678              {\PackageWarning{askreply}%
2679                {Key `#1' is not recognised. It has been set as `tooltip'}%
2680               \mcqdisplayanswer*[#2]{#7}(#6)% Display as tooltip
2681              }
```

```latex
2682                }
2683              }%
2684          \hfill\mcqreset%
2685          \end{tcolorbox}%
2686          \assignpoints@storevaluetoaux%
2687            {\assignpointsprefix{quiz}@points}%
2688            {\theassignpoints@quizcount.\theassignpoints@quizquestioncount}%
2689            {\strip@pt\assignpoints@currentquizquestionpoints}%
2690          \askreply@storevaluetoaux{quiz@quizquestiontitle}%
2691            {\thequizquestion}{\currentquizquestiontitle}%
2692          \global\boolfalse{assignpoints@inquizquestion}%
2693          \togglefalse{assignpoints@checkemptystring}%
2694        }
2695    %- Quizquestion* environment (single exclusive answer)
2696    %----------------------------------------------------
2697    %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
2698    %          [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
2699    %          {#3} = Mandatory correct answer number (only one)
2700    %          {#4} = Mandatory wrong answer numbers comma separated
2701    %          {#5} = Optional title
2702    %          (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
2703    %          <#7> = Optional explanation text of the answer (usually given ;-)
2704    \NewDocumentEnvironment{quizquestion*}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
2705      {
2706        \stepcounter{quizquestion}%
2707        \label{quizquestion:\thequiz.\thequizquestion}%
2708        \ifbool{assignpoints@inquizquestion}%
2709          {\PackageError{assignpoints}{You cannot nest quizquestion environments}}%
2710          {}%
2711        \global\booltrue{assignpoints@inquizquestion}%
2712        \setlength{\assignpoints@currentquizquestionpoints}{0pt}%
2713        \global\assignpoints@currentquizquestionpoints=\assignpoints@currentquizquestionpoints%
2714        \renewcommand{\currentquizquestiontitle}{#5}%
2715        \ifstrempty{#5}%
2716          {\toggletrue{assignpoints@checkemptystring}}%
2717          {\togglefalse{assignpoints@checkemptystring}}%
2718        \stepcounter{assignpoints@quizquestioncount}%
2719        \let\mcqproposal\mcqproposalSingle%
2720        \setcounter{mcqtrialnumber}{-1}
2721        \begin{tcolorbox}[quizquestionpoints]
2722      }
2723      {
2724        \mcqverify{#3}{#4}\hspace{0.1\linewidth}%
2725        \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
2726          {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
```

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```latex
      {\ifstrequal{#1}{margin}%
        {\mcqdisplayanswer[#2]{#7}(#6)} % Display answer in the margin
        {\ifstrequal{#1}{tooltip}%
          {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
          {\PackageWarning{askreply}%
            {Key\space `#1'\space is\space not\space recognised.\space
            It\space has\space been\space set\space as\space `tooltip'}%
           \mcqdisplayanswer*[#2]{#7}(#6)% Display as tooltip
          }
        }
      }%
    \hfill\mcqreset%
    \end{tcolorbox}%
    \assignpoints@storevaluetoaux%
      {\assignpointsprefix{quiz}@points}%
      {\theassignpoints@quizcount.\theassignpoints@quizquestioncount}%
      {\strip@pt\assignpoints@currentquizquestionpoints}%
    \askreply@storevaluetoaux{quiz@quizquestiontitle}%
      {\thequizquestion}{\currentquizquestiontitle}%
    \global\boolfalse{assignpoints@inquizquestion}%
    \togglefalse{assignpoints@checkemptystring}%
  }
%- Quizquestion environment (multiple answers)
%-------------------------------------------
%- Usage – <#1> = Optional way to display the answer, in the margin (default) or as tooltip
%         [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
%         {#3} = Mandatory correct answer numbers comma separated
%         {#4} = Mandatory wrong answer numbers comma separated
%         {#5} = Optional title
%         (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
%         <#7> = Optional explanation text of the answer (usually given ;-)
%- Quiz question demo environment (single exclusive answer)
\NewDocumentEnvironment{mcqdemo}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
  {
    \stepcounter{mcqdemo}%
    \renewcommand{\currentquizquestiontitle}{#5}%
    \ifstrempty{#5}%
      {\toggletrue{assignpoints@checkemptystring}}%
      {\togglefalse{assignpoints@checkemptystring}}%
    \let\mcqproposal\mcqproposalMultipleDemo%
    \begin{tcolorbox}[mcqdemo]
  }
  {
    \mcqverifydemo{#3}{#4}\hspace{0.1\linewidth}%
    \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
```

```latex
              {\mcqdisplayanswerdemo*[#2]{#7}(#6)}% Display as tooltip
              {\ifstrequal{#1}{margin}%
                {\mcqdisplayanswerdemo[#2]{#7}(#6)} % Display answer in the margin
                {\ifstrequal{#1}{tooltip}%
                  {\mcqdisplayanswerdemo*[#2]{#7}(#6)}% Display as tooltip
                  {\PackageWarning{askreply}%
                    {Key\space `#1'\space is\space not\space recognised.\space
                    It\space has\space been\space set\space as\space `tooltip'}%
                    \mcqdisplayanswerdemo*[#2]{#7}(#6)% Display as tooltip
                  }
                }
              }%
        \hfill\mcqresetdemo%
        \end{tcolorbox}%
        \togglefalse{assignpoints@checkemptystring}%
    }
    %---------------------------------------------------------
    %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
    %          [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
    %          {#3} = Mandatory correct answer number (only one)
    %          {#4} = Mandatory wrong answer numbers comma separated
    %          {#5} = Optional title
    %          (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
    %          <#7> = Optional explanation text of the answer (usually given ;-)
    \NewDocumentEnvironment{mcqdemo*}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
      {
        \stepcounter{mcqdemo}%
        \renewcommand{\currentquizquestiontitle}{#5}%
        \ifstrempty{#5}%
          {\toggletrue{assignpoints@checkemptystring}}%
          {\togglefalse{assignpoints@checkemptystring}}%
        \let\mcqproposal\mcqproposalSingleDemo%
        \begin{tcolorbox}[mcqdemo]
      }
      {
        \mcqverifydemo{#3}{#4}\hspace{0.1\linewidth}%
        \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
          {\mcqdisplayanswerdemo*[#2]{#7}(#6)}% Display as tooltip
          {\ifstrequal{#1}{margin}%
            {\mcqdisplayanswerdemo[#2]{#7}(#6)} % Display answer in the margin
            {\ifstrequal{#1}{tooltip}%
              {\mcqdisplayanswerdemo*[#2]{#7}(#6)}% Display as tooltip
              {\PackageWarning{askreply}%
                {Key\space `#1'\space is\space not\space recognised.\space
                It\space has\space been\space set\space as\space `tooltip'}%
```

```
2817              \mcqdisplayanswerdemo*[#2]{#7}(#6)% Display as tooltip
2818            }
2819          }
2820        }%
2821      \hfill\mcqresetdemo%
2822      \end{tcolorbox}%
2823      \togglefalse{assignpoints@checkemptystring}%
2824    }
2825 }{% If `assignpoints` is not loaded, defining "exercises" and "quizzes" environments
2826   %- With the following, one is able to assign points, even if they are not displayed
2827   %- It can be useful to prepare exercises and solutions in a first step
2828   \let\points\vphantom
2829   \NewDocumentCommand{\itempoints}{ s m }{%
2830     \IfBooleanTF{#1}{\vphantom{#2}}{\vphantom{#2}}
2831   }
2832   \providecommand{\currentexercisetitle}{}
2833   \providecommand{\currentsubexercisetitle}{}
2834   \providecommand{\currentquiztitle}{}
2835   \providecommand{\currentquizquestiontitle}{}
2836   %
2837   %- Exercise environment
2838   %----------------------
2839   \NewDocumentEnvironment{exercise}{  }{%
2840     \catcode`\^^M=\active
2841     \@ifnextchar[%
2842       {\catcode`\^^M=5 \exercise@start}
2843       {\catcode`\^^M=5 \exercise@start[]}
2844   }{%
2845     \endVerbatimOut%
2846     \ifaskreply@display
2847       \ifdefstring{\askreply@level}{basic}{%
2848         \toggletrue{askreply@level@display@on}%
2849         \gdef\asreply@firstlevel@color{askreplythirdcolor}%
2850         \gdef\asreply@secondlevel@color{lightgray}%
2851         \gdef\asreply@thirdlevel@color{lightgray}%
2852       }{\ifdefstring{\askreply@level}{intermediate}{%
2853         \toggletrue{askreply@level@display@on}%
2854         \gdef\asreply@firstlevel@color{lightgray}%
2855         \gdef\asreply@secondlevel@color{askreplythirdcolor}%
2856         \gdef\asreply@thirdlevel@color{lightgray}%
2857       }{\ifdefstring{\askreply@level}{advanced}{%
2858         \toggletrue{askreply@level@display@on}%
2859         \gdef\asreply@firstlevel@color{lightgray}%
2860         \gdef\asreply@secondlevel@color{lightgray}%
2861         \gdef\asreply@thirdlevel@color{askreplythirdcolor}%
```

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```
2862            }{}%level=none
2863          }%
2864        }%
2865        \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip]
2866          % Empty versus non-empty exercise title
2867          \ifdefempty{\currentexercisetitle}%
2868            {\strut\lightbf{\exercisename\space\theexercise}}%
2869            {\strut\lightbf{\exercisename\space\theexercise%
2870                \enspace\textemdash\enspace\currentexercisetitle}%
2871          }%
2872        \end{tcolorbox}\nobreak%\nopagebreak?
2873        \askreplybox
2874          \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{askreplyfirstcolor}}
2875            \input{\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}
2876            \par\phantomtext%
2877            \ifdefempty{\solutionID}%
2878              {\relax}%
2879              {\par\hfill\raisebox{-2.5pt}{%
2880                  \textcolor{askreplysecondcolor}{%
2881                    \itshape\footnotesize{\normalfont\faSquare}%
2882                      \enspace Solution\space page~\pageref{solution:\solutionID}%
2883              }}%
2884            }%
2885          \endtikzpagelayer
2886          \par\vspace{\dimexpr.5\baselineskip\relax}%
2887        \endaskreplybox
2888        \vspace{\askreply@afterskip}%
2889      \fi
2890    \ifaskreply@storing
2891      \ifx\askreply@title\empty%
2892        \askreply@filecopytoenv%
2893          {\askreply@outfilename}
2894          {\exercisesdir\jobname-exercise-\askreplytwodigits{\theexercise}.env}%
2895          {\string\begin{exercise}}%
2896          {\string\end{exercise}}%
2897          {\string[storing=false]}%
2898      \else
2899        \askreply@filecopytoenv%
2900          {\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2901          {\exercisesdir\jobname-exercise-\askreplytwodigits{\theexercise}.env}%
2902          {\string\begin{exercise}}%
2903          {\string\end{exercise}}%
2904          {\string[storing=false, title=\askreply@title]}%
2905      \fi
2906    \fi
```

```
2907    \askreply@storevaluetoaux{exercise@exerciseID}{\theexercise}{ID:\theexercise}%
2908    \askreply@storevaluetoaux{exercise@exercisetitle}{\theexercise}{\currentexercisetitle}%
2909    \ifaskreply@list
2910      \addcontentsline{loe}{exercise}{\protect\numberline{\theexercise}\currentexercisetitle}%
2911    \fi
2912    \togglefalse{askreply@level@display@on}%
2913  }
2914  \def\exercise@start[#1]{%
2915    \pgfkeys{/askreply/.cd, #1}%
2916    \stepcounter{exercise}%
2917    \getenvID[exercise]{\theexercise}%
2918    \getenvID[solution]{\theexercise}%
2919    \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2920    \phantomsection\label{exercise:\theexercise}% To have correct \pageref link (see TeX.SX/49061)
2921    \ifx\askreply@title\@empty% WORKS!
2922    \else
2923      \renewcommand{\currentexercisetitle}{\askreply@title}%
2924    \fi
2925    \renewcommand{\envsymbol}{%
2926      \normalfont\faIcon{laptop-code}}% \faIcon{feather-alt}} \faPenFancy \faMarker
2927    \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2928    \def\askreply@outfilename{%
2929      \exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2930    \VerbatimOut{\askreply@outfilename}%
2931  }
2932  %- Subexercise environment
2933  %------------------------
2934  \NewDocumentEnvironment{subexercise}{ G{} }
2935    {\stepcounter{subexercise}%
2936     \renewcommand{\currentsubexercisetitle}{#1}
2937     \begin{tcolorbox}[subexercisenopoint]
2938  }{\end{tcolorbox}%
2939     \askreply@storevaluetoaux{exercise@subexercisetitle}%
2940        {\theexercise.\thesubexercise}{\currentsubexercisetitle}%
2941  }
2942  %
2943  %- Solution environment
2944  %---------------------
2945  \NewDocumentEnvironment{solution}{  }{%
2946    \catcode`\^^M=\active
2947    \@ifnextchar[%
2948        {\catcode`\^^M=5 \solution@start}
2949        {\catcode`\^^M=5 \solution@start[]}
2950  }{%
2951    \endVerbatimOut%
```

```
2952    \ifaskreply@display
2953      \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
2954                       colback=askreplysecondcolor!75!black, colframe=askreplysecondcolor]
2955      % Empty versus non-empty solution title
2956      \ifstrempty{\currentexercisetitle}%
2957        {\strut\lightbf{\solutionname\space\theassignpoints@solutioncount\space%
2958            \hfill{\small%
2959            (\exercisenamenocap\space\hyperlink{\exerciseID}{\thesolution},\space%
2960            page\space\pageref{exercise:\thesolution})}}%
2961        }%
2962        {\strut\lightbf{\solutionname\space\thesolution\space%
2963            \enspace\textemdash\enspace\currentexercisetitle\space%
2964            \enspace{\small(page\space\pageref{exercise:\thesolution})}}%
2965        }%
2966      \end{tcolorbox}\nobreak%\nopagebreak?
2967      \askreplybox
2968        \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{askreplyfirstcolor}}
2969          \input{\askreply@outfilename}
2970          \par\phantomtext%
2971          \vspace*{.5\askreplyboxvskip}%
2972        \endtikzpagelayer
2973        \par\vspace{\dimexpr.5\baselineskip\relax}%
2974      \endaskreplybox
2975      \vspace{\askreply@afterskip}%
2976    \fi
2977    \ifaskreply@storing
2978      \askreply@filecopytoenv%
2979        {\exercisesdir\jobname-solution-body-\askreplytwodigits{\thesolution}.ltx}%
2980        {\exercisesdir\jobname-solution-\askreplytwodigits{\thesolution}.env}%
2981        {\string\begin{solution}}%
2982        {\string\end{solution}}%
2983        {\string[storing=false]}%
2984    \fi
2985    \askreply@storevaluetoaux{exercise@solutionID}{\thesolution}{ID:\thesolution}%
2986  }
2987  \def\solution@start[#1]{%
2988    \pgfkeys{/askreply/.cd, #1}%
2989    \ifx\askreply@ID\empty%
2990      \stepcounter{solution}%
2991      \getenvID[solution]{\thesolution}%
2992    \else
2993      \setcounter{solution}{\askreply@ID}%
2994      \getenvID[solution]{\thesolution}%
2995    \fi
2996    \stepcounter{solutionnumber}%
```

```latex
2997    \hypersetup{unicode, pdfborder=0 0 0, linkcolor=white}%
2998    \phantomsection\label{solution:\solutionID}%
2999    \renewcommand{\envsymbol}{\faLightbulb}%
3000    \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
3001    \getenvtitle[exercise]{\thesolution}%
3002    \def\askreply@outfilename{%
3003      \exercisesdir\jobname-solution-body-\askreplytwodigits{\thesolution}.ltx}%
3004    \VerbatimOut{\askreply@outfilename}%
3005  }
3006  %- Subsolution environment
3007  %-------------------------
3008  \NewDocumentEnvironment{subsolution}{ O{} }
3009    {\stepcounter{subsolution}%
3010     \getenvtitle[subexercise]{\thesolution.\thesubsolution}%
3011     \begin{tcolorbox}[subsolutionnopoint]
3012  }{\end{tcolorbox}}
3013  %- Quiz environment
3014  %------------------
3015  \NewDocumentEnvironment{quiz}{ }{%
3016    \catcode`\^^M=\active
3017    \@ifnextchar[%
3018    {\catcode`\^^M=5 \quiz@start}
3019    {\catcode`\^^M=5 \quiz@start[]}
3020  }{%
3021    \endVerbatimOut%
3022    \ifaskreply@display
3023      \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
3024                      colupper=askreplysecondcolor, colback=black!15, colframe=black!50]
3025      % Empty versus non-empty exercise title
3026      \ifdefempty{\currentquiztitle}%
3027        {\strut\lightbf{\quizname\space\thequiz}}%
3028        {\strut\lightbf{\quizname\space\thequiz%
3029            \enspace\textemdash\enspace\currentquiztitle}%
3030        }%
3031    \end{tcolorbox}\nobreak%\nopagebreak?
3032    \askreplybox
3033    %\vspace{-.5\baselineskip}
3034    \tikzpagelayer{\@askreplytikzquizframebox{askreplyframedbox, fill=white, draw=black!50}}
3035      \input{\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}
3036      \par\phantomtext%
3037      %\vspace{-.5\baselineskip}%
3038    \endtikzpagelayer
3039    \par\vspace{\dimexpr.5\baselineskip\relax}%
3040    \endaskreplybox
3041    \vspace{\askreply@afterskip}%
```

```
3042    \fi
3043    \ifaskreply@storing
3044      \ifx\askreply@title\empty%
3045        \askreply@filecopytoenv%
3046          {\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
3047          {\quizzesdir\jobname-quiz-\askreplytwodigits{\thequiz}.env}%
3048          {\string\begin{quiz}}%
3049          {\string\end{quiz}}%
3050          {\string[storing=false]}%
3051      \else
3052        \askreply@filecopytoenv%
3053          {\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
3054          {\quizzesdir\jobname-quiz-\askreplytwodigits{\thequiz}.env}%
3055          {\string\begin{quiz}}%
3056          {\string\end{quiz}}%
3057          {\string[storing=false, title={\askreply@title}]}%
3058      \fi
3059    \fi
3060    \askreply@storevaluetoaux{quiz@quizID}{\thequiz}{ID:\thequiz}%
3061    \askreply@storevaluetoaux{quiz@quiztitle}{\thequiz}{\currentquiztitle}%
3062    \ifaskreply@list
3063      \addcontentsline{loq}{quiz}{\protect\numberline{\thequiz}\currentquiztitle}%
3064    \fi
3065  }
3066  \def\quiz@start[#1]{%
3067    \pgfkeys{/askreply/.cd, #1}%
3068    \stepcounter{quiz}%
3069    \getenvID[quiz]{\thequiz}%
3070    \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
3071    \phantomsection\label{quiz:\thequiz}% To have correct \pageref link (see TeX.SX/49061)
3072    \ifx\askreply@title\@empty% WORKS!
3073    \else
3074      \renewcommand{\currentquiztitle}{\askreply@title}%
3075    \fi
3076    \renewcommand{\envsymbol}{\normalfont\faList}%
3077    \settowidth{\envsymbolwidth}{\large\envsymbol}%
3078    \def\askreply@outfilename{\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
3079    \VerbatimOut{\askreply@outfilename}%
3080  }
3081  %- Quizquestion environment (multiple answers)
3082  %------------------------------------------
3083  %- Usage – <#1> = Optional way to display the answer, in the margin (default) or as tooltip
3084  %          [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
3085  %          {#3} = Mandatory correct answer numbers comma separated
3086  %          {#4} = Mandatory wrong answer numbers comma separated
```

```
3087  %                {#5} = Optional title
3088  %                (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
3089  %                <#7> = Optional explanation text of the answer (usually given ;-)
3090  \NewDocumentEnvironment{quizquestion}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
3091    {
3092      \stepcounter{quizquestion}%
3093      \label{quizquestion:\thequiz.\thequizquestion}%
3094      \renewcommand{\currentquizquestiontitle}{#5}%
3095      \let\mcqproposal\mcqproposalMultiple%
3096      \begin{tcolorbox}[quizquestionnopoint]
3097    }
3098    {
3099      \mcqverify{#3}{#4}\hspace{0.1\linewidth}%
3100      \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
3101        {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
3102        {\ifstrequal{#1}{margin}%
3103          {\mcqdisplayanswer[#2]{#7}(#6)}% Display answer in the margin
3104          {\ifstrequal{#1}{tooltip}%
3105            {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
3106            {\PackageWarning{askreply}%
3107              {Key\space `#1'\space is\space not\space recognised.\space
3108              It\space has\space been\space set\space as\space `tooltip'}%
3109             \mcqdisplayanswer*[#2]{#7}(#6)% Display as tooltip
3110            }
3111          }
3112        }%
3113      \hfill\mcqreset%
3114      \end{tcolorbox}%
3115      \askreply@storevaluetoaux{quiz@quizquestiontitle}%
3116        {\thequizquestion}{\currentquizquestiontitle}%
3117    }
3118  %- Quizquestion* environment (single exclusive answer)
3119  %----------------------------------------------------
3120  %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
3121  %          [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
3122  %          {#3} = Mandatory correct answer number (only one)
3123  %          {#4} = Mandatory wrong answer numbers comma separated
3124  %          {#5} = Optional title
3125  %          (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
3126  %          <#7> = Optional explanation text of the answer (usually given ;-)
3127  \NewDocumentEnvironment{quizquestion*}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
3128    {
3129      \stepcounter{quizquestion}%
3130      \label{quizquestion:\thequiz.\thequizquestion}%
3131      \renewcommand{\currentquizquestiontitle}{#5}%
```

```
3132        \let\mcqproposal\mcqproposalSingle%
3133        \begin{tcolorbox}[quizquestionnopoint]
3134    }
3135    {
3136      \mcqverify{#3}{#4}\hspace{0.1\linewidth}%
3137      \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
3138        {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
3139        {\ifstrequal{#1}{margin}%
3140          {\mcqdisplayanswer[#2]{#7}(#6)} % Display answer in the margin
3141          {\ifstrequal{#1}{tooltip}%
3142            {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
3143            {\PackageWarning{askreply}%
3144              {Key\space `#1'\space is\space not\space recognised.\space
3145              It\space has\space been\space set\space as\space `tooltip'}%
3146             \mcqdisplayanswer*[#2]{#7}(#6)% Display as tooltip
3147            }
3148          }
3149        }%
3150      \hfill\mcqreset%
3151      \end{tcolorbox}%
3152      \askreply@storevaluetoaux{quiz@quizquestiontitle}%
3153        {\thequizquestion}{\currentquizquestiontitle}%
3154    }
3155 }
3156 \endinput
3157
3158 %%%%%
3159 %-- End of `askreply` package
3160 %%%%%
```

subodore

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