Extension de style TeXjazz-askreply

Documentation — v.0.1g — 14 janvier 2021

EJAZZ*

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

* <ejazz.fr@gmail.com>

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* ».

---

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.
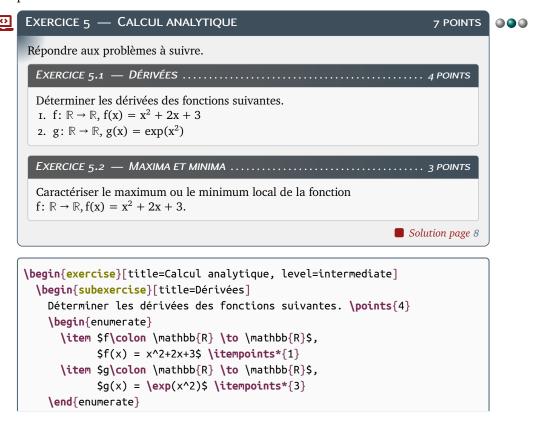
3 Ajustements et options

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}
```

7

```
  \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: $\mathbb{R} \to \mathbb{R}$, $g(x) = \exp(x^2) \Rightarrow g'(x) = 2x \cdot \exp(x^2)$

> *Solution 5.2 — Maxima et minima* .... *3 points*
>
> 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 $x_e = -2$.

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'inter-face 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.

9

`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.

```latex
\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*⟩ (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:

'askreply.sty' and 'askreply[-fr].tex'

5 Historique des versions

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
\cs_new_protected:Nn \askreply_captureshell:Nn
 {
  \sys_get_shell:nnN { #2 } { } #1
```

---

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

```
  \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, solu-

tion 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).

```
69  %-- Defining package identification
70  %--------------------------------
71
72  \NeedsTeXFormat{LaTeX2e}
73  \ProvidesPackage{texjazz-askreply}%
74    [2021/01/14 v0.1g – Managing exercises/quizzes and their solutions/answers]
```

```latex
75
76  %-- Loading necessary utilities
77  %-----------------------------
78
79  \RequirePackage{xparse}% LaTeX3 syntax parser for LaTeX2e to define advanced commands/
          environments
80  \RequirePackage{etoolbox}% Swiss knife!
81  \RequirePackage{pgfkeys}% Key-value options management
82
83  \RequirePackage{ifplatform}% Check operating system
84  \RequirePackage{shellesc}% Access system commands from LaTeX (--shell-escape option is needed)
85  \RequirePackage{calc}% Utilities to calculate and length measuring
86
87  \RequirePackage{catchfile}% Managing files in macros
88  \RequirePackage{fancyvrb}% Enhanced verbatim environments
89
90  \RequirePackage{xcolor}% Color settings for layout cosmetics
91  \RequirePackage{tikz}% Graphics amazing tool
92  \usetikzlibrary{backgrounds, calc, fpu, chains, fit, positioning, shapes, shadings}
93  \RequirePackage{atbegshi}% Hooks inserting for code executed before the page shipped out
94  \RequirePackage{zref-abspos}% Making positions on a page available (references)
95  \RequirePackage{tikzpagenodes}% Extended page nodes
96  \RequirePackage{tcolorbox}% Fancy efficient coloured boxes (load needed TikZ libraries)
97  \tcbuselibrary{breakable, fitting, raster, skins, theorems, xparse, hooks}
98  \RequirePackage{fontawesome5}% Nice and useful symbols
99
100 \RequirePackage{pdfbase}[2017/03/16]% Companion package to ocgx2
101 \RequirePackage{ocgbase}% Companion package to ocgx2
102 \RequirePackage[tikz]{ocgx2}% Awesome package used for quizzes extended OCG/OCMD contents
103
104 \RequirePackage{marginnote}% Managing margin elements
105
106 %- Wrong page reference (correct number, but wrong link), it's normal, one must add
          \phantomsection:
107 %- https://tex.stackexchange.com/questions/49061/incorrect-target-of-label-link-produced-by-
          hyperref
108 %- https://tex.stackexchange.com/questions/88468/wrong-page-with-pageref-if-using-thmtools
109 \@ifpackageloaded{hyperref}{}{\RequirePackage{hyperref}}% Hyperref package is needed
110
111 %-- Options
112 %----------
113
114 \newbool{askreply@usefrenchlanguage}
115 \newbool{askreply@usegermanlanguage}
116
117 \DeclareOption{french}{%
118   \booltrue{askreply@usefrenchlanguage}%
119 }
120 \DeclareOption{german}{% German conventions seem to be close to French ones
121   \booltrue{askreply@usegermanlanguage}%
122 }
123
124 \DeclareOption*{%- This package does not have any other options
125   \PackageWarning{askreply}{Unknown option '\CurrentOption'}
126 }
127 \ProcessOptions\relax%
128
129 %-- Checking/creating storage directories for exercises/solutions and quizzes/answers
```

```latex
%-------------------------------------------------------------------------

%- From: https://tex.stackexchange.com/questions/16790/[...]
%-           [...]write18-capturing-shell-script-output-as-command-variable/
\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
\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.}}
  %\captureshell*[\dirstatus]{[ -d ./Solutions-\jobname/ ] && echo 'Existing' || echo 'Missing'}
  %\ifdefstring{\dirstatus}{Existing}%
  %  {\message{*** \string`\jobname.tex' *** Directory `Solutions' already exists.}}%
  %  {\ShellEscape{mkdir Solutions-\jobname}}
\fi
\ifmacosx
  \typeout{*** The Operating System is a \macosxname\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}
```

```latex
        \typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' has been created.}}
  \fi
\ifwindows
  \message{*** The Operating System is \windowsname\space ***}
  % To be continued... But how? We don't know Windows commands. Is the following correct?
  \captureshell*[\dirstatus]{IF exist Exercises-\jobname (echo Existing) ELSE (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]{IF exist Quizzes-\jobname (echo Existing) ELSE (echo Missing)}
  \ifdefstring{\dirstatus}{Existing}%
    {\typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' already exists.}}%
    {\ShellEscape{mkdir Exercises-\jobname}
      \typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' has been created.}}
\fi

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

%-- Setting lengths, colors, commands and macros
%---------------------------------------------

%- If \lightbf is defined OK (e.g. medium bold or regular if light font), else \textbf{}
\ifcsdef{lightbf}{}{\let\lightbf\textbf}

%- Colors definitions
\definecolor{askreplycolorenvbackground}{gray}{0.95}
\definecolor{askreplydarkelectricblue}{RGB}{83, 104, 120}% HTML: #536878 - CMYK: 31, 13, 0, 53
\definecolor{askreplyredbrown}{RGB}{153, 25, 25}% #991919ff
\definecolor{askreplyteal}{RGB}{0, 128, 128}% medium-satured blue-green
\definecolor{askreplybuttongray}{RGB}{200, 200, 200}
\colorlet{askreplyfirstcolor}{askreplydarkelectricblue}
\colorlet{askreplysecondcolor}{askreplyredbrown}
\colorlet{askreplythirdcolor}{askreplyteal}

%- Boxes standard lengths
\newlength{\askreplyboxmargins}
\setlength{\askreplyboxmargins}{8pt}%24pt
\newlength{\askreplyboxvsep}
\setlength{\askreplyboxvsep}{6pt}
\newlength{\askreplyboxvskip}
\setlength{\askreplyboxvskip}{4pt}
\newlength{\askreplyboxrule}
\setlength{\askreplyboxrule}{0.6pt}
\newlength{\askreplyboxarc}
\setlength{\askreplyboxarc}{4pt}
\newlength{\askreplyshadingradius}
\setlength{\askreplyshadingradius}{1.8\baselineskip}

\newlength{\askreplyparindent}% Because sometimes using \parindent is not effective: WHY?
%\setlength{\askreplyparindent}{\parindent}
\setlength{\askreplyparindent}{0pt}

%\newcommand{\tcbphantom}{\vspace*{\dimexpr-\baselineskip-\dp\strutbox\relax}\vphantom{Hg}}
\newcommand{\tcbphantom}{\vspace*{-\dp\strutbox}\vphantom{Hg}}

%- Configuring itemize and enumerate lists (vertical and horizontal skips)
```

```latex
246  \newlength\askreplyitemlabelwidth
247  \newlength\askreplyitemindent
248
249  \ifbool{askreply@usefrenchlanguage}{% Adapted from French-Babel
250    \newcommand*{\askreplyitemlabel}{\textemdash}  % ou \textendash (tiret plus court)
251    \settowidth{\askreplyitemlabelwidth}{\askreplyitemlabel}
252    \setlength{\askreplyitemindent}{\parindent}
253    %\addtolength{\askreplyitemindent}{\askreplyitemlabelwidth}
254    %\addtolength{\askreplyitemindent}{\labelsep}
255  }{
256    \newcommand*{\askreplyitemlabel}{\tiny\normalfont\faCircle}
257    \settowidth{\askreplyitemlabelwidth}{\askreplyitemlabel}
258    \setlength{\askreplyitemindent}{\parindent}
259    \addtolength{\askreplyitemindent}{\askreplyitemlabelwidth}
260    \addtolength{\askreplyitemindent}{\labelsep}
261  }
262
263  %- For an unknown reason, we failed to configure list environments with the `enumitem' package
264  %- inside the TikZ box (issue with \hsize/\linewidth?). A workaround is to put the list environment
265  %- into a tcolorbox (see below exercise/quiz def.) or a minipage (avoid "minipage" environment:
266  %- it is not breakable!). Breakable lists are fine inside a TikZ box, but take care that they are
267  %- not breakable inside a "tcolorbox" (here subexercise, and so on...)
268  %- For the moment being, we leave `enumitem' package and only set the things for French.
269
270  %-- Customising exercise/quiz name (easily overwritten or deleted by main class or other packages)
271  % -------------------------------------------------------------------------------------------------
272
273  \ifbool{askreply@usefrenchlanguage}{%
274    \providecommand{\exercisename}{Exercice}
275    \providecommand{\exercisenamenocap}{exercice}
276    %\providecommand{\quizname}{Quiz}
277    \providecommand{\quizname}{Questionnaire}% Maybe better, but Quiz is now current, mostly with MCQ
278    \providecommand{\solutionname}{Solution}
279    \newcommand*{\quizverifyname}{Vérifier}
280    \newcommand*{\quizresetname}{Réinitialiser}
281    \newcommand*{\quizselectname}{Tout sélectionner}
282    \newcommand*{\quizshowanswername}{Afficher la réponse}
283    \newcommand*{\quizhideanswername}{Masquer la réponse}
284    \newcommand*{\quizrecordname}{Enregistrer}
285    \newcommand*{\quizexplanationname}{Explications}
286    \newcommand*{\quiztrialnumbername}{Nombre d'essai : }
287  }{%
288    \ifbool{askreply@usegermanlanguage}{%
289      \providecommand{\exercisename}{Ausübung}% Correct?
290      \providecommand{\exercisenamenocap}{Ausübung}
291      \providecommand{\quizname}{Quiz}% Correct?
292      \providecommand{\solutionname}{Lösung}% Correct?
293      \newcommand*{\quizverifyname}{Verify}
294      \newcommand*{\quizresetname}{Reset}
295      \newcommand*{\quizselectname}{Select all}
296      \newcommand*{\quizshowanswername}{Show answer}
297      \newcommand*{\quizhideanswername}{Hide answer}
```

```latex
298    \newcommand*{\quizrecordname}{Record}
299    \newcommand*{\quizexplanationname}{Explanations}
300    \newcommand*{\quiztrialnumbername}{Number of trial: }
301  }{%
302    \providecommand{\exercisename}{Exercise}
303    \providecommand{\exercisenamenocap}{exercise}
304    \providecommand{\quizname}{Quiz}
305    \providecommand{\solutionname}{Solution}
306    \newcommand*{\quizverifyname}{Verify}
307    \newcommand*{\quizresetname}{Reset}
308    \newcommand*{\quizselectname}{Select all}
309    \newcommand*{\quizshowanswername}{Show answer}
310    \newcommand*{\quizhideanswername}{Hide answer}
311    \newcommand*{\quizrecordname}{Record}
312    \newcommand*{\quizexplanationname}{Explanations}
313    \newcommand*{\quiztrialnumbername}{Number of trial: }
314  }%
315  }
316
317  %-- File writing management (as "verbatim.sty" way of doing)
318  %---------------------------------------------------------
319
320  %- Defining verbatim way to store contents in a file (stolen to `tcolorbox' package)
321  \newwrite\askreply@out% Not in the commands below to avoid "No room for a new \write" error!!!
322
323  %- From tcolorbox package
324  \def\askreplyverbatimwrite#1{%
325    \@bsphack
326    \immediate\openout\askreply@out #1
327    \let\do\@makeother\dospecials
328    \catcode`\^^M\active \catcode`\^^I=12
329    \def\verbatim@processline{%
330      \immediate\write\askreply@out
331        {\the\verbatim@line}}%
332    \verbatim@start}%
333
334  \def\endaskreplyverbatimwrite{%
335    \immediate\closeout\askreply@out
336    \@esphack%
337  }
338
339  %- From: https://tex.stackexchange.com/questions/219996/[...]
340  %-        [...]writing-environments-out-to-files-and-prepending-appending-additional-code/
341  \def\askreplyverbatimpreapp{\FV@Environment{}{askreplyverbatimpreapp}}
342
343  %- Write #2 before and #3 after environment contents
344  \def\FVB@askreplyverbatimpreapp#1#2#3{%
345    \@bsphack
346    \begingroup
347      \FV@UseKeyValues
348      \FV@DefineWhiteSpace
349      \def\FV@Space{\space}%
350      \FV@DefineTabOut
351      \def\FV@ProcessLine{\immediate\write\FV@OutFile}%
352      \immediate\openout\FV@OutFile #1\relax
353      % Added next 2 lines
354      \immediate\write\FV@OutFile{#2}%
355      \def\FV@appendline{#3}%
```

```latex
356        \let\FV@FontScanPrep\relax
357        \let\@noligs\relax
358        \FV@Scan}
359
360    \def\FVE@askreplyverbatimpreapp{%
361      % Added next line
362      \immediate\write\FV@OutFile{\FV@appendline}%
363      \immediate\closeout\FV@OutFile\endgroup\@esphack}
364
365    \DefineVerbatimEnvironment{askreplyverbatimpreapp}{askreplyverbatimpreapp}{}
366
367    \NewDocumentCommand{\askreply@filecopytoenv}{ m m m m G{} }{%
368      %- Usage – #1 = <src-file>, #2 = <target-file>,
369      %-         #3 = <prepend-stuff>, #4 = <append-stuff>, #5 = [<env-options>]
370      %- Reset the target file to empty (not to add the things twice),
371      %- then process the modifications
372      \IfFileExists{#2}%
373        {\CatchFileDef{\askreply@targetcontent}{#2}{}\let\askreply@targetcontent\empty}{}%
374      \begingroup
375      \IfFileExists{#1}%
376        {\CatchFileDef{\askreply@filecontent}{#1}{%
377          % Keep existing end-of-lines (Original)
378          %\catcode`\|=12 \endlinechar=`^^J\catcode\endlinechar=12\relax
379          \let\do\@makeother\dospecials% Stuff from verbatim.sty and alike
380          \catcode`\^^L\active%  What this corresponds to? Line feed?
381          \catcode`\^^I=\active% keep tabs? YES!
382          \catcode`\ =\active% keep spaces? YES!
383          \catcode`\^^M\active% keep end of line? YES
384        }%
385      }%
386        {\let\askreply@filecontent\empty}%
387      \immediate\openout\askreply@out=#2\relax
388      % \newlinechar`^^J seems to be LaTeX native end of line
389      % (and ^^M the one of external files? TODO: clarify this!)
390      \ifstrempty{#5}%
391        {\immediate\write\askreply@out{#3^^J\detokenize\expandafter{\askreply@filecontent}#4}}%
392        {\immediate\write\askreply@out{#3#5^^J\detokenize\expandafter{\askreply@filecontent}#4}}%
393      \immediate\closeout\askreply@out
394      \endgroup
395    }
396
397    %-- Defining styles for TikZ and `tcolorbox` boxes
398    %---------------------------------------------
399
400    %- Defining styles for the "first layer" box (TikZ)
401    \tikzset{%
402      askreplyframedbox/.style={%
403        on background layer,
404        draw=askreplyfirstcolor,
405        line width=\askreplyboxrule,
406        fill=askreplycolorenvbackground,
407        rounded corners=\askreplyboxarc,
408      },%
409      askreplyframedtitlebox/.style={%
410        on background layer,
411        fill=askreplyfirstcolor!75!black,
412        rounded corners=\askreplyboxarc,
413      },
```

```
414      }
415
416   \tcbset{askreplybackstageboxtitle/.style={%
417      enhanced,
418      notitle,
419      colback=askreplyfirstcolor!75!black,
420      colframe=askreplyfirstcolor,
421      colupper=white,
422      %fontupper=\normalsize\scshape,
423      arc=\askreplyboxarc,
424      boxsep=2pt, boxrule=0.4pt,
425      left=4pt, right=4pt, top=1.75pt, bottom=1.75pt,
426      sharp corners=south,
427      overlay={%
428         %\node[xshift=(-0.5\envsymbolwidth-4pt)]
429         %  at (frame.west) {\textcolor{askreplysecondcolor}{\normalfont\large\envsymbol}};
430         \node[xshift=-10pt] at (frame.west) {% 10pt = 0.5*16pt + 2pt
431            \textcolor{askreplysecondcolor}{\makebox[16pt][c]{\normalfont\large\envsymbol}}};
432         \askreply@level@display% Defined below just before the environments definition
433         },
434      before={\par\pagebreak[0]\parindent=0pt},%\parindent=0pt
435      after={\par\vspace*{-2\askreplyboxrule}},
436      }
437   }
438
439   %- Defining styles for the "second layer" (breakabke) boxes: with and without points assignment
440   \tcbset{subexercisepoints/.style={%
441      enhanced,
442      breakable,
443      colback=black!3,
444      colframe=black!30,
445      coltitle=white,%fonttitle=\itshape\scshape,
446      title style={left color=black!65, right color=askreplyfirstcolor!75!black,
447                   middle color=askreplyfirstcolor!30!black!75},
448      toptitle=1.0pt, bottomtitle=1.0pt,
449      fontupper=\normalfont,
450      arc=0.5\askreplyboxarc,
451      boxsep=2pt, boxrule=0.4pt,
452      left=4pt, right=4pt, top=4pt, bottom=4pt,
453      title={% Empty versus non-empty subexercise title
454         \iftoggle{assignpoints@checkemptystring}%
455            {\strut\textsf{\textit{\textsc{\lightbf{%
456               \exercisename~\currentexercisenumber.\currentsubexercisenumber}}}}}%
457            {\strut\textsf{\textit{\textsc{\lightbf{%
458               \exercisename~\currentexercisenumber.\currentsubexercisenumber}}}}%
459             \ifbool{askreply@usefrenchlanguage}%
460                {\textsf{\textsc{\textit{\lightbf{%
461                   \enspace\textemdash\enspace\currentsubexercisetitle}}}}}%
462                {\textsf{\textsc{\textit{\lightbf{%
463                   \enspace\textendash\enspace\currentsubexercisetitle}}}}}%
464            }%
465         ~\dotfill~\textsf{\textsc{\textit{\lightbf{\footnotesize%
466            \displaypoints*[exercise]{\currentexercisenumber.\currentsubexercisenumber}}}}}%
467         },
468      before={\par\pagebreak[0]\vspace{4pt}},% No indent because title box
469      after=\par\vspace{2pt},
470      }
471   }
```

```latex
472
473  \tcbset{subsolutionpoints/.style={%
474    enhanced,
475    breakable,
476    colback=black!3, colframe=black!30,
477    coltitle=white, %fonttitle=\itshape\scshape,
478    title style={left color=black!65, right color=askreplysecondcolor!75!black,
479                 middle color=askreplysecondcolor!30!black!75},
480    toptitle=1.0pt, bottomtitle=1.0pt,
481    fontupper=\normalfont,
482    arc=0.5\askreplyboxarc,
483    boxsep=2pt, boxrule=0.4pt,
484    left=4pt, right=4pt, top=4pt, bottom=4pt,
485    title={% Empty versus non-empty subexercise title
486      \iftoggle{assignpoints@checkemptystring}%
487        {\strut\textsf{\textit{\textsc{\lightbf{%
488          \solutionname~\theassignpoints@solutioncount.\theassignpoints@subsolutioncount}}}}}%
489        {\strut\textsf{\textit{\textsc{\lightbf{%
490          \solutionname~\theassignpoints@solutioncount.\theassignpoints@subsolutioncount}}}}%
491          \ifbool{askreply@usefrenchlanguage}%
492            {\textsf{\textsc{\textit{\lightbf{%
493              \enspace\textemdash\enspace\currentsubexercisetitle}}}}}%
494            {\textsf{\textsc{\textit{\lightbf{%
495              \enspace\textendash\enspace\currentsubexercisetitle}}}}}%
496        }%
497        ~\dotfill~\textsf{\textsc{\textit{\lightbf{\footnotesize%
498          \displaypoints*[exercise]{%
499            \theassignpoints@solutioncount.\theassignpoints@subsolutioncount}}}}}%
500    },
501    before={\par\pagebreak[0]\vspace{4pt}},%\parindent=0pt
502    %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
503    after=\par\vspace{2pt},
504    }
505  }
506
507  \tcbset{subexercisenopoint/.style={%
508    enhanced,
509    breakable,
510    colback=black!3,
511    colframe=black!30,
512    coltitle=white, %fonttitle=\itshape\scshape,
513    title style={left color=black!65, right color=askreplyfirstcolor!75!black,
514                 middle color=askreplyfirstcolor!30!black!75},
515    toptitle=1.0pt, bottomtitle=1.0pt,
516    fontupper=\normalfont,
517    arc=0.5\askreplyboxarc,
518    boxsep=2pt, boxrule=0.4pt,
519    left=4pt, right=4pt, top=4pt, bottom=4pt,
520    title={% Empty versus non-empty subexercise title
521      \ifdefempty{\currentsubexercisetitle}%
522        {\strut\textsf{\textit{\textsc{\lightbf{\exercisename~\theexercise.\thesubexercise}}}}}%
523        {\strut\textsf{\textit{\textsc{\lightbf{\exercisename~\theexercise.\thesubexercise}}}}%
524          \ifbool{askreply@usefrenchlanguage}%
525            {\textsf{\textsc{\textit{\lightbf{%
526              \enspace\textemdash\enspace\currentsubexercisetitle}}}}}%
527            {\textsf{\textsc{\textit{\lightbf{%
528              \enspace\textendash\enspace\currentsubexercisetitle}}}}}%
529        }%
```

```latex
530        },
531      before={\par\pagebreak[0]\vspace{4pt}},%\parindent=0pt
532      %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
533      after=\tcbphantom\par\vspace*{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
534      %after=\par,% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
535      }
536  }
537
538  \tcbset{subsolutionnopoint/.style={%
539      enhanced,
540      breakable,
541      colback=black!3, colframe=black!30,
542      %colbacktitle=black!65,
543      coltitle=white, %fonttitle=\itshape\scshape,
544      title style={left color=black!65, right color=askreplysecondcolor!75!black,
545                   middle color=askreplysecondcolor!30!black!75},
546      toptitle=1.0pt, bottomtitle=1.0pt,
547      %fontupper=\normalfont,
548      arc=0.5\askreplyboxarc,
549      boxsep=2pt, boxrule=0.4pt,
550      top=4pt, bottom=4pt,
551      left=4pt, right=4pt,
552      title={% Empty versus non-empty subexercise title
553        \ifdefempty{\currentsubexercisetitle}%
554          {\strut\textsf{\textit{\textsc{\lightbf{\solutionname~\thesolution.\thesubsolution}}}}}%
555          {\strut\textsf{\textit{\textsc{\lightbf{\solutionname~\thesolution.\thesubsolution}}}}%
556            \ifbool{askreply@usefrenchlanguage}%
557              {\textsf{\textit{\textsc{\lightbf{%
558                \enspace\textemdash\enspace\currentsubexercisetitle}}}}}%
559              {\textsf{\textit{\textsc{\lightbf{%
560                \enspace\textendash\enspace\currentsubexercisetitle}}}}}%
561          }%
562        },
563      before={\par\pagebreak[0]\vspace{4pt}},%\parindent=0pt
564      %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
565      %after=\tcbphantom\par\vspace*{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
566      after=\par\vspace{2pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
567      }
568  }
569
570  %-- Defining quizzes specific styles
571  %----------------------------------
572
573  \tikzset{%
574    quizbutton/.style={
575      shape=rectangle, rounded corners=1pt,
576      text=black, draw=#1!90,
577      top color=#1!15!white, bottom color=#1!75,
578      inner xsep=6pt, inner ysep=2pt,
579    },
580  }
581
582  \tcbset{
583    quizquestionpoints/.style={
584      enhanced jigsaw,
585      breakable,% doc. p.377: A tcolorbox inside a tcolorbox is automatically set to be
                unbreakable
```

```latex
586      %enforce breakable,% If one really wants the inner box to be breakable, use enforce
           breakable
587      lowerbox=ignored,
588      colframe=black!30,
589      colback=black!2!white,
590      coltitle=askreplyfirstcolor,
591      %fonttitle={\scshape\fontsize{9pt}{10.8pt}\selectfont\titlingspacedfont},
592      fonttitle={\normalfont\itshape\scshape\strut},
593      attach title to upper={\par\vspace{2pt}},
594      toptitle=0.0pt, bottomtitle=0.0pt,
595      fontupper=\normalfont\small,
596      title={% Empty versus non-empty subexercise title
597        \iftoggle{assignpoints@checkemptystring}%
598          {\textsf{\lightbf{\normalsize\quizname~\currentquiznumber.\currentquizquestionnumber}}}%
599          {\textsf{\lightbf{\normalsize\quizname~\currentquiznumber.\currentquizquestionnumber}}%
600            \textsf{\lightbf{\normalsize\enspace\textemdash\enspace\currentquizquestiontitle}}%
601            ~\dotfill~\textsf{\lightbf{\footnotesize\scshape%
602              \displaypoints*[quiz]{\currentquiznumber.\currentquizquestionnumber}}}%
603          }%
604        },
605      %overlay={%
606      %  \node[xshift=.5\marginparsep, yshift=-.5\baselineskip, anchor=west] at (frame.north east)
607      %    {\footnotesize\quiztrialnumbername\themcqtrialnumber};
608      %  },
609      opacityback=0.0,
610      %opacityfill=0.4,
611      boxsep=0pt, boxrule=0.4pt,
612      arc=0.5\askreplyboxarc,
613      left=6pt, right=6pt,
614      top = 4pt, bottom = 4pt,% default=2mm
615      width=\linewidth,
616      %before skip=4pt, after skip=4pt,
617      before={\par\pagebreak[0]\vspace{0pt}},%\parindent=0pt
618      %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
619      %after=\tcbphantom\par\vspace*{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
620      after=\par\vspace{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
621    },
622  }
623
624  \tcbset{
625    quizquestionnopoint/.style={
626      enhanced jigsaw,
627      breakable,% doc. p.377: A tcolorbox inside a tcolorbox is automatically set to be
           unbreakable
628      %enforce breakable,% If one really wants the inner box to be breakable, use enforce
           breakable
629      lowerbox=ignored,
630      colframe=black!30,
631      colback=black!2!white,
632      coltitle=askreplyfirstcolor,
633      %fonttitle={\scshape\fontsize{9pt}{10.8pt}\selectfont\titlingspacedfont},
634      fonttitle={\normalfont\itshape\scshape\strut},
635      attach title to upper={\par\vspace{2pt}},
636      toptitle=0.0pt, bottomtitle=0.0pt,
637      fontupper=\normalfont\small,
638      title={% Empty versus non-empty quizquestion title
639        \ifdefempty{\currentquizquestiontitle}%
640          {\strut\textsf{\lightbf{\quizname~\thequizquestion}}}%
```

27

```latex
                 {\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!
     },
}

\tcbset{
   mcqdemo/.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\lightbf{\quizname~\thequizdemo.\themcqdemo}}%
           {\strut\lightbf{\quizname~\@Alph{\thequizdemo}.\themcqdemo}%
               \enspace\textemdash\enspace\lightbf{%
                 \currentquizquestiontitle~\dotfill}%~{\small\displaypoints*[quiz]{\thequizdemo.
          \themcqdemo}}}%
           }%
        },
        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
696
697  %-- Setting and tweaking useful macros from the unofficial `tikzpagelayer` package (Martin
          Scharrer)
698  %
         --------------------------------------------------------------------------------------------

699
700  %- See: https://tex.stackexchange.com/questions/377161/[...]
701  %-           [...]how-to-neatly-correctly-underline-with-a-tikz-rectangle/
702  %-      https://tex.stackexchange.com/questions/334528/the-current-state-of-the-art-tikz-
          underliner/
703  %- Martin Scharrer's original code: https://bitbucket.org/martin_scharrer/tikzpagelayers (dead
          link)
704
705  \newcommand\tikzpagemark{}
706  \DeclareRobustCommand\tikzpagemark[1]{%
707    \leavevmode
708    \zsavepos{tikzpagemarkpos-#1}%
709  }
710
711  \def\tpl@addto#1#2{%
712    \begingroup
713      \ifx#1\@undefined
714        \global\let#1\empty
715      \else
716        \ifx#1\relax
717          \global\let#1\empty
718        \fi
719      \fi
720      \edef\@tempa{\@thetikzpagemark}%
721      \expandafter\g@addto@macro\expandafter#1\expandafter{%
722        \expandafter\set@tikzpagemark\expandafter{\@tempa}%
723          #2%
724      }%
725    \endgroup
726  }
727
728  \newenvironment{tikzpagelayer}[2][foreground]{%
729    \stepcounter{tikzpagemark}%
730    \tikzpagelayeron
731    \tikzpagemark{\@thetikzpagemark-begin}%
732    \expandafter\tpl@addto\csname tikzpagelayer@#1@page%
733      \zref@extract{tikzpagemarkpos-\@thetikzpagemark-begin}{abspage}\endcsname{#2}%
734    \edef\endtikzpagelayer{\noexpand\tikzpagemark{\@thetikzpagemark-end}}%
735  }{}%
736
737  \newcommand{\starttikzpagelayer}[3][foreground]{%
738    \begingroup
739      \tikzpagelayeron
740      \edef\@thetikzpagemark{@#2}%
741      \tikzpagemark{\@thetikzpagemark-begin}%
742      \expandafter\tpl@addto\csname tikzpagelayer@#1@page%
743        \zref@extract{tikzpagemarkpos-\@thetikzpagemark-begin}{abspage}\endcsname{#3}%
744    \endgroup
745  }
746
747  \newcommand{\stoptikzpagelayer}[1]{%
748    \tikzpagemark{@#1-end}%
```

```
749    }%
750
751    \def\set@tikzpagemark#1{%
752      \def\@thetikzpagemark{#1}%
753      \edef\tplfirstpage{\zref@extract{tikzpagemarkpos-#1-begin}{abspage}}%
754      \edef\tpllastpage{\zref@extract{tikzpagemarkpos-#1-end}{abspage}}%
755      \coordinate (tplbegin) at
756        ([shift={(\zposx{tikzpagemarkpos-#1-begin}sp,
757                  \zposy{tikzpagemarkpos-#1-begin}sp)}]current page.south west);%
758      \coordinate (tplend) at
759        ([shift={(\zposx{tikzpagemarkpos-#1-end}sp,
760                  \zposy{tikzpagemarkpos-#1-end}sp)}]current page.south west);%
761    }
762
763    \newcommand\tplonpage[2][foreground]{%
764      \begingroup
765        \pgfmathtruncatemacro\@tplpage{#2}%
766        \expandafter\endgroup
767        \expandafter\tpl@addto\csname tikzpagelayer@#1@page\@tplpage\endcsname
768    }
769
770    \newcommand\tplonnextpage[1][foreground]{%
771      \tplonpage[#1]{\@tplnextpage}%
772    }
773
774    \newcommand\tplonlastpage[1][foreground]{%
775      \tplonpage[#1]{\tpllastpage}%
776    }
777
778    \newcommand\tplonmiddlepages[2][foreground]{%
779      \begingroup
780        \@tempcnta=\tplfirstpage\relax
781        \loop
782        \advance\@tempcnta\@ne
783        \ifnum\@tempcnta<\tpllastpage
784          \tplonpage[#1]{\number\@tempcnta}{#2}%
785        \repeat
786      \endgroup
787    }
788
789    %- During the page `abspage' is one to low
790    \def\@tplnextpage{\c@abspage+2}
791
792    %- In the shipout routine it is correct
793    \def\@@tplnextpage{\c@abspage+1}
794
795    \newcounter{tikzpagemark}
796    \def\@thetikzpagemark{\number\c@tikzpagemark}
797
798    \def\@tikzpagelayeron{%
799      \AtBeginShipoutNext{\tikzpagelayer@atbeginshipout}%
800      \global\let\tikzpagelayeron\relax
801    }
802
803    \AtBeginShipout{\tikzpagelayer@atbeginshipout}%
804    \let\tikzpagelayeron\@tikzpagelayeron
805    \let\tikzpagelayer@background\empty
806    \let\tikzpagelayer@foreground\empty
```

```
807
808  \def\tikzpagelayer@atbeginshipout{%
809    \setbox\AtBeginShipoutBox\hbox{%
810      \color@setgroup
811      \let\@tplnextpage\@@tplnextpage
812      \begin{tikzpicture}[remember picture]%
813        \path[use as bounding box,every node/.style={},every rectangle node/.style={}]
814          node[inner sep=0pt,outer sep=0pt] (current page box) {\box\AtBeginShipoutBox};
815        %\fill[line width=10pt,blue,opacity=.5]
816        %  (current page box.north west) rectangle (current page box.south east);
817        \begin{pgfonlayer}{background}
818          \begin{scope}%
819            \csname tikzpagelayer@background@page\number\c@abspage\endcsname
820              \tikzpagelayer@background
821          \end{scope}%
822        \end{pgfonlayer}%
823        \begin{scope}%
824          \csname tikzpagelayer@foreground@page\number\c@abspage\endcsname
825          \tikzpagelayer@foreground
826        \end{scope}%
827      \end{tikzpicture}%
828      \color@endgroup
829    }%
830    \global\let\tikzpagelayer@background\empty
831    \global\let\tikzpagelayer@foreground\empty
832    \global\let\tikzpagelayeron\@tikzpagelayeron
833  }
834
835  \NewDocumentCommand{\@askreplytikzframebox}{ m m }{% Background box for exercises and solutions
836    \begin{scope}[#1]
837      \ifnum\tplfirstpage=\tpllastpage
838        %\node[circle, radius=2pt, fill=yellow]
839        %  at ([xshift={(-\askreplyboxmargins-\askreplyparindent+\askreplyboxrule)},
840        %       yshift={(\ht\strutbox+1.5\askreplyboxvskip+0.5\askreplyboxrule)}]tplbegin) {};
841        \path [#1] let
842          \p1 = (tplbegin),
843          \p2 = (tplend),
844          \p3 = (current page text area.north west),
845          \p4 = (current page text area.south east) in
846            (\x4-.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) --
847            (\x4-.5\pgflinewidth,\y2-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) --
848            (\x3+.5\pgflinewidth,
849             \y2-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) [rounded corners=false] --
850            (\x3+.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) -- cycle;
851        \begin{scope}
852          %- Starting with a shading and fading quarter of a circle
853          \node[save path=\shadingstartboxpath,
854                shape=circular sector,
855                rounded corners=false,
856                outer sep=0pt,
857                circular sector angle=90,
858                shape border uses incircle,
859                shape border rotate=135,%-225,%-135,%-45,%135,%45,
860                anchor=sector center,
861                minimum size=\askreplyshadingradius,
862                xshift={(-\askreplyboxmargins-\askreplyparindent+\askreplyboxrule)},
863                yshift={(\ht\strutbox+1.5\askreplyboxvskip+0.0\askreplyboxrule)},
864                ]
```

```
865              (shadingstartbox) at (tplbegin) {};
866            \clip[use path=\shadingstartboxpath];
867            \shade[inner color=#2, outer color=askreplycolorenvbackground] let %,path fading=fade in
868              \p1=($(shadingstartbox.arc center)-(shadingstartbox.sector center)$),
869              \n1={veclen(\y1,\x1)} in
870                (shadingstartbox.sector center) circle (\n1);
871          \end{scope}
872          %\begin{scope}
873          %  %- Ending with a solution reference (for exercise only, empty for solution)
874          %  \node[anchor=east, color=askreplysecondcolor] at (tplend)
875          %    {\itshape\footnotesize{\normalfont\faSquare}\enspace Solution};
876          %\end{scope}
877        \else
878          \path [#1] let
879            \p1 = (tplbegin),
880            \p3 = (current page text area.north west),
881            \p4 = (current page text area.south east) in
882              (\x3+.5\pgflinewidth,\y4-\dp\strutbox) [rounded corners=false] --
883              (\x3+.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) -|
884              (\x4-.5\pgflinewidth,\y4-\dp\strutbox);
885          \begin{scope}
886            %- Starting with a shading and fading quarter of a circle
887            \node[save path=\shadingstartboxpath,
888                  shape=circular sector,
889                  rounded corners=false,
890                  outer sep=0pt,
891                  circular sector angle=90,
892                  shape border uses incircle,
893                  shape border rotate=135,%-225,%-135,%-45,%135,%45,
894                  anchor=sector center,
895                  minimum size=\askreplyshadingradius,
896                  xshift={(-\askreplyboxmargins-\askreplyparindent+\askreplyboxrule)},
897                  yshift={(\ht\strutbox+1.5\askreplyboxvskip+0.0\askreplyboxrule)},
898                  ]
899              (shadingstartbox) at (tplbegin) {};
900            \clip[use path=\shadingstartboxpath];
901            \shade[inner color=#2, outer color=askreplycolorenvbackground] let %,path fading=fade in
902              \p1=($(shadingstartbox.arc center)-(shadingstartbox.sector center)$),
903              \n1={veclen(\y1,\x1)} in
904                (shadingstartbox.sector center) circle (\n1);
905          \end{scope}
906          \tplonpage{\tpllastpage}{%
907            \begin{scope}[#1]
908              \path [#1] let
909                \p1 = (tplend),
910                \p3 = (current page text area.north west),
911                \p4 = (current page text area.south east) in
912                  (\x3+.5\pgflinewidth,\y3+.5\pgflinewidth) --
913                  (\x3+.5\pgflinewidth,\y1-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) -|
914                  (\x4-.5\pgflinewidth,\y3+.5\pgflinewidth);
915            \end{scope}%
916          }%
917          \tplonmiddlepages{%
918            \begin{scope}[#1]
919              \path [#1,draw=none] let
920                \p1 = (current page text area.north west),
921                \p2 = (current page text area.south east) in
922                  (\x1+.5\pgflinewidth,\y1+.5\pgflinewidth) --
```

```
923              (\x1+.5\pgflinewidth,\y2-.5\pgflinewidth) --
924              (\x2-.5\pgflinewidth,\y2-.5\pgflinewidth) --
925              (\x2-.5\pgflinewidth,\y1+.5\pgflinewidth) -- cycle;
926          \path [#1] let
927            \p1 = (current page text area.north west),
928            \p2 = (current page text area.south east) in
929              (\x1+.5\pgflinewidth,\y1+.5\pgflinewidth) --
930              (\x1+.5\pgflinewidth,\y2-.5\pgflinewidth)
931              (\x2-.5\pgflinewidth,\y2-.5\pgflinewidth) --
932              (\x2-.5\pgflinewidth,\y1+.5\pgflinewidth);
933        \end{scope}%
934      }%
935    \fi
936  \end{scope}
937 }
938
939 \NewDocumentCommand{\@askreplytikzquizframebox}{ m }{% Background box for quizzes
940   \begin{scope}[#1]
941     \ifnum\tplfirstpage=\tpllastpage
942       %\node[circle, radius=2pt, fill=yellow]
943       %  at ([xshift={(-\askreplyboxmargins-\askreplyparindent+\askreplyboxrule)},
944       %      yshift={(\ht\strutbox+1.5\askreplyboxvskip+0.5\askreplyboxrule)}]tplbegin) {};
945       \path [#1] let
946         \p1 = (tplbegin),
947         \p2 = (tplend),
948         \p3 = (current page text area.north west),
949         \p4 = (current page text area.south east) in
950           (\x4-.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) --
951           (\x4-.5\pgflinewidth,\y2-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) --
952           (\x3+.5\pgflinewidth,
953            \y2-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) [rounded corners=false] --
954           (\x3+.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) -- cycle;
955     \else
956       \path [#1] let
957         \p1 = (tplbegin),
958         \p3 = (current page text area.north west),
959         \p4 = (current page text area.south east) in
960           (\x3+.5\pgflinewidth,\y4-\dp\strutbox) [rounded corners=false] --
961           (\x3+.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) -|
962           (\x4-.5\pgflinewidth,\y4-\dp\strutbox);
963       \tplonpage{\tpllastpage}{%
964         \begin{scope}[#1]
965           \path [#1] let
966             \p1 = (tplend),
967             \p3 = (current page text area.north west),
968             \p4 = (current page text area.south east) in
969               (\x3+.5\pgflinewidth,\y3+.5\pgflinewidth) --
970               (\x3+.5\pgflinewidth,\y1-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) -|
971               (\x4-.5\pgflinewidth,\y3+.5\pgflinewidth);
972         \end{scope}%
973       }%
974       \tplonmiddlepages{%
975         \begin{scope}[#1]
976           \path [#1,draw=none] let
977             \p1 = (current page text area.north west),
978             \p2 = (current page text area.south east) in
979               (\x1+.5\pgflinewidth,\y1+.5\pgflinewidth) --
980               (\x1+.5\pgflinewidth,\y2-.5\pgflinewidth) --
```

33

```latex
981              (\x2-.5\pgflinewidth,\y2-.5\pgflinewidth) --
982              (\x2-.5\pgflinewidth,\y1+.5\pgflinewidth) -- cycle;
983          \path [#1] let
984            \p1 = (current page text area.north west),
985            \p2 = (current page text area.south east) in
986              (\x1+.5\pgflinewidth,\y1+.5\pgflinewidth) --
987              (\x1+.5\pgflinewidth,\y2-.5\pgflinewidth)
988              (\x2-.5\pgflinewidth,\y2-.5\pgflinewidth) --
989              (\x2-.5\pgflinewidth,\y1+.5\pgflinewidth);
990          \end{scope}%
991        }%
992      \fi
993    \end{scope}
994  }
995
996  %-- Storing and retrieving stuff macros
997  %------------------------------------
998
999  \newcommand{\askreply@storevaluetoaux}[3]{%
1000    % Usage: #1 = prefix – #2 = <env-number> – #3 = <length-name>
1001    \immediate\write\@auxout{\string\global\string\long\string\@namedef{askreply@#1@#2}{#3}}%
1002  }
1003
1004  \newcommand{\askreply@readvaluefromaux}[2]{%
1005    % Usage: #1 = prefix – #2 = <value-(number)-(text)-(length-without-pt)>
1006    %   e.g. |\setlength{<length>}{\askreply@readvaluefromaux{\askreply@prefix{#1}}{#2}pt}
1007    \ifcsname askreply@#1@#2\endcsname%
1008      \@nameuse{askreply@#1@#2}%
1009    \else%
1010      \textbf{??}%
1011      \PackageWarning{askreply}%
1012        {Key 'askreply@#1@#2' not found in aux file. Maybe you need to recompile?}%
1013    \fi%
1014  }
1015
1016  \NewDocumentCommand{\getenvtitle}{ O{exercise} m }{%
1017    % Usage – #1 = <env-name>, #2 = <env-number>
1018    \ifstrequal{#1}{exercise}% For the exercise title
1019      {% Storage exists
1020        \ifcsname askreply@exercise@exercisetitle@#2\endcsname%
1021          \renewcommand{\currentexercisetitle}{%
1022            \askreply@readvaluefromaux{exercise}{exercisetitle@#2}}%
1023        \else% Storage is empty or not yet available
1024          \PackageWarning{askreply}%
1025            {Storage key not found in aux file. Maybe you need to recompile?}%
1026        \fi%
1027      }{}%
1028    \ifstrequal{#1}{subexercise}% For the subexercise title
1029      {% Storage exists   assignpoints@exercise@subexercisetitle@1.1
1030        \ifcsname askreply@exercise@subexercisetitle@#2\endcsname%
1031          \renewcommand{\currentsubexercisetitle}{%
1032            \askreply@readvaluefromaux{exercise}{subexercisetitle@#2}}%
1033        \else% Storage is empty or not yet available
1034          \PackageWarning{askreply}%
1035            {Storage key not found in aux file. Maybe you need to recompile?}%
1036        \fi%
1037      }{}%
1038  }
```

```latex
\providecommand{\exerciseID}{}
\providecommand{\solutionID}{}
\providecommand{\quizID}{}
\providecommand{\answerID}{}

\NewDocumentCommand{\getenvID}{ O{exercise} m }{%
  % Usage – #1 = <env-name>, #2 = <env-number>
  \ifstrequal{#1}{exercise}% For the exercise ID
    {% Storage exists
      \ifcsname askreply@exercise@exerciseID@#2\endcsname%
        \renewcommand{\exerciseID}{%
          \askreply@readvaluefromaux{exercise}{exerciseID@#2}}%
      \else% Storage is empty or not yet available
        \renewcommand{\exerciseID}{}%
      \fi%
    }{}%
  \ifstrequal{#1}{solution}% For the solution ID
    {% Storage exists
      \ifcsname askreply@exercise@solutionID@#2\endcsname%
        \renewcommand{\solutionID}{%
          \askreply@readvaluefromaux{exercise}{solutionID@#2}}%
      \else% Storage is empty or not yet available
        \renewcommand{\solutionID}{}%
      \fi%
    }{}%
}

%-- Environment counters and symbols
%----------------------------------

%\@ifclassloaded{book}{%
%\@ifundefined{chapter}{%
  \newcounter{exercise}%
  \newcounter{solution}%
  \newcounter{solutionnumber}%
  \newcounter{quiz}%
  \newcounter{answer}%
%}{%
%  \newcounter{exercise}[chapter]%
%  \newcounter{solution}[chapter]%
%  \newcounter{quiz}[chapter]%
%  \newcounter{answer}[chapter]%
%}%

\newcounter{subexercise}[exercise]
\newcounter{subsolution}[solution]
\newcounter{quizquestion}[quiz]
\newcounter{mcqdemo}
\newcounter{quizdemo}
\newcounter{mcqquiztotaldemo}
\newcounter{subanswer}[answer]

\newcounter{mcqproposal}[quizquestion]% Proposal IDs counter to choose within a quiz question
\newcounter{mcqquiztotal}[quizquestion]% Total propositions counter within a quiz question
\newcounter{mcqproposaldemo}[mcqdemo]% Proposal IDs counter to choose within a quiz question
      demo
```

```latex
\newcounter{mcqtrialnumber}[quizquestion]

% Exercise symbol: \faIcon{feather-alt}} \faPenFancy \faMarker \faQuestion
% Solution icon: \faLightbulb \faLightbulb[regular] \faUbuntu \faInfo \faInfoCircle

\newcommand{\envsymbol}{}
\newlength{\envsymbolheight}
\newlength{\envsymbolwidth}

%- Setting quiz symbols: designed with the help of the Fontawesome icons packages v.4.6 and v
%   .5.7

\newlength{\quizcheckboxwidth}
\newlength{\quizcheckgap}
\newlength{\quizsymbolwidth}
\newlength{\quizanswerbuttonwidth}

\setlength{\quizcheckgap}{0.5em}
\setlength{\quizsymbolwidth}{10pt}
\setlength{\quizanswerbuttonwidth}{%
  \widthof{\scriptsize\lightbf{\textsc{\quizhideanswername}}}%
}%
\addtolength{\quizanswerbuttonwidth}{12pt}% inner 2*xsep button style

% \faCheck width = 10.0 pt; \faTimes width = 7.85pt => same width in a box
\newcommand{\checktick}{%
  \makebox[\quizsymbolwidth][c]{%
    \textcolor{green!60!black}{\normalfont\normalsize\faCheck}%
  }%
}
\newcommand{\crosstick}{%
  \makebox[\quizsymbolwidth][c]{%
    \textcolor{red!60!black}{\normalfont\normalsize\faTimes}%
  }%
}

%-- Setting displaying and recording useful commands
%-------------------------------------------------

\newcommand{\phantomtext}{\vspace*{\dimexpr-\baselineskip-\askreplyboxvskip\relax}\phantom{Hg}}

\begingroup%
  \catcode`P=12 \catcode`T=12 \lowercase{\endgroup
  \def\askreplysplitbefore#1{%
    \expandafter\askreply@strip@pt\expandafter\@askreplysplitbefore\the\dimexpr#1PT\relax\@nil
  }
  \def\askreplyssplitafter#1{%
    \expandafter\askreply@strip@pt\expandafter\@askreplysplitafter\the\dimexpr#1PT\relax\@nil
  }
  \def\@askreplysplitbefore#1.#2.#3PT\@nil{#1}
  \def\@askreplysplitafter#1.#2.#3PT\@nil{#2}
  \def\askreply@strip@pt#1#2PT#3\@nil{#1#2..PT\@nil}
} % balance the open brace after \lowercase

\newcommand\askreplytwodigits[1]{%
  \ifnum#1<10 0#1\else #1\fi
}
```

```latex
1153  \newtoggle{askreply@points}
1154  \@ifpackageloaded{texjazz-assignpoints}%
1155    {\toggletrue{askreply@points}}{\togglefalse{askreply@points}}
1156
1157
1158  %
          -----------------------------------------------------------------------------------------------

1159  %-- Defining the different environments with options (PGFKeys and l3keys2e system)
1160  %
          -----------------------------------------------------------------------------------------------

1161
1162  %-- Managing key-value options of commands (PGFKeys)
1163  %------------------------------------------------
1164
1165  %- https://tex.stackexchange.com/questions/521011/how-is-a-pgf-key-defined/
1166  \newif\ifaskreply@display\askreply@displaytrue %or display/.default=true
1167  \newif\ifaskreply@storing\askreply@storingtrue %or storing/.default=true
1168  \newif\ifaskreply@list\askreply@listtrue %or list/.default=true
1169
1170  \pgfkeys{%
1171    /askreply/.is family, /askreply/.cd,
1172    display/.is if=askreply@display,
1173    %display/.default=true,% DOES NOT WORK! WHY?
1174    storing/.is if=askreply@storing,
1175    %storing/.default=true,% DOES NOT WORK! WHY?
1176    list/.is if=askreply@list,
1177    %list/.default=true,% DOES NOT WORK! WHY?
1178    title/.store in=\askreply@title,
1179    title=,
1180    level/.is choice,
1181    level/basic/.code=\def\askreply@level{basic},
1182    level/intermediate/.code=\def\askreply@level{intermediate},
1183    level/advanced/.code=\def\askreply@level{advanced},
1184    level/.default=\def\askreply@level{},
1185    before skip/.store in=\askreply@beforeskip,
1186    before skip=6pt,
1187    after skip/.store in=\askreply@afterskip,
1188    after skip=6pt,
1189    text color/.store in=\askreply@textcolor,
1190    text color=black,
1191    points/.store in=\askreply@editpoints,
1192    points=,
1193    symbol/.store in=\askreply@envsymbol,
1194    symbol=,
1195    ID/.store in=\askreply@ID,
1196    ID=,
1197  }
1198
1199  \newenvironment{askreplybox}{%
1200    %\centering%
1201    \list{}{%
1202      \leftmargin\askreplyboxmargins%
1203      \rightmargin\leftmargin%
1204      \listparindent\askreplyparindent%
1205      \itemindent\askreplyparindent%
1206      \parsep\parskip%
```

```latex
1207      }%
1208      \item\relax%
1209   }{\endlist}
1210
1211   %- Box height measurement
1212   \newlength{\askreply@detect@boxheight}
1213   \newtcolorbox{askreply@measurebox}[2][]{% From http://tex.stackexchange.com/questions/203194/
1214     blank,%show bounding box, parbox=false,
1215     overlay={\xdef#2{\tcb@height}},
1216     #1
1217   }
1218
1219   %- https://tex.stackexchange.com/questions/428462/[...]
1220   %-    [...]how-can-i-dynamically-set-the-box-height-to-the-max-height-of-a-group-of-boxes
1221
1222   % Backend boxmaker
1223   %\long\def\askreply@box#1#2#3{%
1224   %   \tikz\node[draw, line width=.4pt, inner sep=2pt,outer sep=0pt,align=left,minimum width=#2,
1225          minimum height=#3]
1226   %{\parbox{\dimexpr#2-4pt}{\raggedright\small#1}};}
1227
1228   % User-level boxmaker
1229   %\long\def\nodebox#1#2#3{\ABC@box{#1}{#2}{#3}\kern-.4pt}% kern used to horizontally shift boxes
1230          back by stroke width of frame
1231
1232   %\newdimen\nodeboxminHT
1233   %\nodeboxminHT=1cm\relax
1234
1235   %\NewEnviron{formrow}{%
1236   %   \leavevmode\unskip\par\sbox\@tempboxa{\BODY}\nodeboxminHT=\the\ht\@tempboxa\BODY\ignorespaces
1237          }
1238
1239
1240
1241   %-- Generic single and multiple MCQs definitions (OCG/OCMD PDF: `ocgx2` package)
1242   %---------------------------------------------------------------------------
1243
1244   %- From: https://tex.stackexchange.com/questions/486148/[...]
1245   %-           [...]avoid-passing-an-empty-optional-argument-an-environment-with-verbatim-content
1246   %-       https://tex.stackexchange.com/questions/490706/[...]
1247   %-          [...]ocgx2-verify-and-reset-of-multiple-choice-questions-with-ocgs
1248   %-       https://tex.stackexchange.com/questions/493987/[...]
1249   %-          [...]ocgx2-xparse-expl3-splitting-comma-separated-ocmd-ocgs-lists-of-arguments-for
1250
1251   %----------------------------
1252   %-- ESSENTIAL! ONLY USE A POINT AS OCG SEPARATOR: ERROR WITH COLON AND @ --> WHY? (French spaces
1253          ?)
1254   %----------------------------
1255
1256   %- Only a step for single solution MCQs: proposal button
1257
1258   \NewDocumentCommand{\quizSingleButton}{m}{% Based on AG's \quizButton command
1259     % Syntax — #1: id choice
1260     % Action on click: toggle myself (choice layer), hide verifcation layer
1261     \stepcounter{mcqproposal}%
1262     \stepcounter{mcqquiztotal}%
1263     \setlength{\quizcheckboxwidth}{\widthof{\faIcon[regular]{circle}}}%
1264     \makebox[\quizcheckboxwidth][c]{%
```

```
1261    %\actionsocg{#1}{}{verify:\thequizquestion}{\faIcon[regular]{circle}}%
1262    \actionsocg{#1}{}{verify.\thequiz.\thequizquestion}{\faIcon[regular]{circle}}%
1263    }%
1264    %\begin{ocg}[radiobtngrp=choice:\thequizquestion]{#1}{#1}{off}% choice layer
1265    \begin{ocg}[radiobtngrp=choice.\thequiz.\thequizquestion]{#1}{#1}{off}% choice layer
1266    %\makebox[\widthof{\faCircleThin}]{\textcolor{green!60!black}{\faCheck}}%
1267    %\makebox[\quizcheckboxwidth]{\textcolor{green!60!black}{\faIcon[solid]{dot-circle}}}%
1268    \hspace*{-\quizcheckboxwidth}%
1269    \makebox[\widthof{\faIcon[regular]{circle}}][c]{\textcolor{green!60!black}{\faDotCircle}}%
1270    \hspace*{-\quizcheckboxwidth}%
1271    \makebox[\quizcheckboxwidth][c]{\textcolor{askreplyfirstcolor}{\faIcon[regular]{circle}}}%
1272    \end{ocg}%
1273    }

1274
1275    \NewDocumentCommand{\quizSingleButtonDemo}{m}{% Based on AG's \quizButton command
1276    % Syntax - #1: id choice
1277    % Action on click: toggle myself (choice layer), hide verifcation layer
1278    \stepcounter{mcqproposaldemo}%
1279    \stepcounter{mcqquiztotaldemo}%
1280    \setlength{\quizcheckboxwidth}{\widthof{\faIcon[regular]{circle}}}%
1281    \makebox[\quizcheckboxwidth][c]{%
1282    %\actionsocg{#1}{}{verify:\thequizquestion}{\faIcon[regular]{circle}}%
1283    \actionsocg{#1}{}{verify.\thequizdemo.\themcqdemo}{\faIcon[regular]{circle}}%
1284    }%
1285    \begin{ocg}[radiobtngrp=choice.\thequizdemo.\themcqdemo]{#1}{#1}{off}% choice layer
1286    \hspace*{-\quizcheckboxwidth}%
1287    \makebox[\widthof{\faIcon[regular]{circle}}][c]{\textcolor{green!60!black}{\faDotCircle}}%
1288    \hspace*{-\quizcheckboxwidth}%
1289    \makebox[\quizcheckboxwidth][c]{\textcolor{askreplyfirstcolor}{\faIcon[regular]{circle}}}%
1290    \end{ocg}%
1291    }

1292
1293    %- Defining a proposition for single solution MCQ

1294
1295    \NewDocumentCommand{\mcqproposalSingle}{o m}{%
1296    % Syntax - #1 = more tcbox options
1297    %          #2 = statement proposal
1298    \begin{tcolorbox}[%
1299    breakable, enhanced,
1300    notitle, colframe=black!60, colback=white,
1301    boxrule=0.2pt, arc=0.4pt, boxsep = 0pt,
1302    left = 4pt, right = 4pt,
1303    top = 4pt, bottom = 4pt,
1304    before skip=4pt, after skip=4pt,
1305    IfValueTF={#1}{#1}{},% More options
1306    ]
1307    \parbox[t]{16pt}{%
1308    \hspace*{2pt}%
1309    %\quizSingleButton{mcqproposalref:\thequizquestion:\themcqproposal}
1310    \quizSingleButton{mcqproposalref.\thequiz.\thequizquestion.\themcqproposal}
1311    }%
1312    \parbox[t]{\linewidth-16pt}{#2}%
1313    \end{tcolorbox}%
1314    }

1315
1316    \NewDocumentCommand{\mcqproposalSingleDemo}{o m}{%
1317    % Syntax - #1 = more tcbox options
1318    %          #2 = statement proposal
```

```
1319    \begin{tcolorbox}[%
1320      breakable, enhanced,
1321      notitle, colframe=black!60, colback=white,
1322      boxrule=0.2pt, arc=0.4pt, boxsep = 0pt,
1323      left = 4pt, right = 4pt,
1324      top = 4pt, bottom = 4pt,
1325      before skip=4pt, after skip=4pt,
1326      IfValueTF={#1}{#1}{},% More options
1327      ]
1328      \parbox[t]{16pt}{%
1329        \hspace*{2pt}%
1330        \quizSingleButtonDemo{mcqproposalref.\thequizdemo.\themcqdemo.\themcqproposaldemo}
1331      }%
1332      \parbox[t]{\linewidth-16pt}{#2}%
1333    \end{tcolorbox}%
1334  }
1335
1336  %- Only a step for multiple solution MCQs (based on AG's \quizButton command)
1337
1338  \NewDocumentCommand{\quizMultipleButton}{m}{%
1339    % Syntax – #1: choice id for answering proposal
1340    % Action on click: toggle myself (choice layer), hide verifcation layer
1341    \stepcounter{mcqproposal}%
1342    \stepcounter{mcqquiztotal}%
1343    \setlength{\quizcheckboxwidth}{\widthof{\faIcon[regular]{square}}}%
1344    \makebox[\quizcheckboxwidth][c]{%
1345      %\actionsocg{#1}{}{verify:\thequizquestion}{\faIcon[regular]{square}}%
1346      \actionsocg{#1}{}{verify.\thequiz.\thequizquestion}{\faIcon[regular]{square}}%
1347    }%
1348    %\makebox[0pt][l]{\actionsocg{#1}{}{verify:\thequizquestion}{\faSquareO}}%
1349    \begin{ocg}{#1}{#1}{off}% choice layer
1350      %\makebox[\widthof{\faSquareO}]{\textcolor{green!60!black}{\faCheck}}%
1351      \hspace*{-\quizcheckboxwidth}%
1352      \makebox[\quizcheckboxwidth][c]{\textcolor{green!60!black}{\faCheckSquare}}%
1353      \hspace*{-\quizcheckboxwidth}%
1354      \makebox[\quizcheckboxwidth][c]{\textcolor{askreplyfirstcolor}{\faIcon[regular]{square}}}%
1355    \end{ocg}%
1356  }
1357
1358  \NewDocumentCommand{\quizMultipleButtonDemo}{m}{%
1359    % Syntax – #1: choice id for answering proposal
1360    % Action on click: toggle myself (choice layer), hide verifcation layer
1361    \stepcounter{mcqproposaldemo}%
1362    \stepcounter{mcqquiztotaldemo}%
1363    \setlength{\quizcheckboxwidth}{\widthof{\faIcon[regular]{square}}}%
1364    \makebox[\quizcheckboxwidth][c]{%
1365      \actionsocg{#1}{}{verify.\thequizdemo.\themcqdemo}{\faIcon[regular]{square}}%
1366    }%
1367    \begin{ocg}{#1}{#1}{off}% choice layer
1368      \hspace*{-\quizcheckboxwidth}%
1369      \makebox[\quizcheckboxwidth][c]{\textcolor{green!60!black}{\faCheckSquare}}%
1370      \hspace*{-\quizcheckboxwidth}%
1371      \makebox[\quizcheckboxwidth][c]{\textcolor{askreplyfirstcolor}{\faIcon[regular]{square}}}%
1372    \end{ocg}%
1373  }
1374
1375  %- Defining a proposition for multiple solution MCQ
1376
```

```latex
1377  \NewDocumentCommand{\mcqproposalMultiple}{o m}{%
1378    % Syntax - #1 = more tcbox options
1379    %           #2 = answering proposal/statement
1380    \begin{tcolorbox}[%
1381      breakable, enhanced,
1382      notitle, colframe=black!60, colback=white,
1383      boxrule=0.2pt, arc=0.4pt, boxsep = 0pt,
1384      left = 4pt, right = 4pt,
1385      top = 4pt, bottom = 4pt,
1386      before skip=4pt, after skip=4pt,
1387      IfValueTF={#1}{#1}{},% More options
1388      ]
1389      \parbox[t]{16pt}{%
1390        \hspace*{2pt}%
1391        %\quizMultipleButton{mcqproposalref:\thequizquestion:\themcqproposal}%
1392        \quizMultipleButton{mcqproposalref.\thequiz.\thequizquestion.\themcqproposal}%
1393      }%
1394      \parbox[t]{\linewidth-16pt}{#2}%
1395    \end{tcolorbox}%
1396  }

1397
1398  \NewDocumentCommand{\mcqproposalMultipleDemo}{o m}{%
1399    % Syntax - #1 = more tcbox options
1400    %           #2 = answering proposal/statement
1401    \begin{tcolorbox}[%
1402      breakable, enhanced,
1403      notitle, colframe=black!60, colback=white,
1404      boxrule=0.2pt, arc=0.4pt, boxsep = 0pt,
1405      left = 4pt, right = 4pt,
1406      top = 4pt, bottom = 4pt,
1407      before skip=4pt, after skip=4pt,
1408      IfValueTF={#1}{#1}{},% More options
1409      ]
1410      \parbox[t]{16pt}{%
1411        \hspace*{2pt}%
1412        \quizMultipleButtonDemo{mcqproposalref.\thequizdemo.\themcqdemo.\themcqproposaldemo}%
1413      }%
1414      \parbox[t]{\linewidth-16pt}{#2}%
1415    \end{tcolorbox}%
1416  }

1417
1418  %--- Note: Splitting a list of arguments
1419  %-------------------------------------
1420  %- See our review and especially Marcel Kruger's answer (LaTeX3 syntax) in:
1421  %-   https://tex.stackexchange.com/questions/493987/[...]
1422  %-     [...]ocgx2-xparse-expl3-splitting-comma-separated-ocmd-ocgs-lists-of-arguments-for
1423  %- See also, for example, Enrico Gregorio's and David Carlisle's answers:
1424  %-   https://tex.stackexchange.com/questions/110898/package-xparse-splitlist-last-token
1425  %-   https://tex.stackexchange.com/questions/348042/splitlist-on-several-delimiters
1426  %-----

1427
1428  %- Setting OCGs reference names: LaTeX3 syntax because of its use by the `ocgx2` package

1429
1430  \NewDocumentCommand{\askreplymcqArgsIds}{m}{%
1431    %mcqproposalref:\thequizquestion:#1%
1432    mcqproposalref.\thequiz.\thequizquestion.#1%
1433  }

1434
```

```
1435  \NewDocumentCommand{\askreplymcqArgsIdsDemo}{m}{%
1436    mcqproposalref.\thequizdemo.\themcqdemo.#1%
1437  }
1438
1439  %- Defining a sequence for storing the "massaged" items
1440
1441  \ExplSyntaxOn
1442
1443  \cs_new_protected:Npn \askreplymcq_process_list:Nn #1 #2
1444    {
1445      % clear the sequence
1446      \seq_clear:N #1
1447      % cycle through the arguments, storing "\mcqArgsIds{<arg>}" in the sequence
1448      \clist_map_inline:nn { #2 }
1449        {
1450          % Here :Nx instead of :Nn ensures that \askreplymcqArgsIds
1451          % is actually evaluated instead of passed as-is
1452          \seq_put_right:Nx #1 { \askreplymcqArgsIds{##1} }
1453        }
1454    }
1455
1456  \cs_new_protected:Npn \askreplymcqdemo_process_list:Nn #1 #2
1457    {
1458      % clear the sequence
1459      \seq_clear:N #1
1460      % cycle through the arguments, storing "\mcqArgsIdsDemo{<arg>}" in the sequence
1461      \clist_map_inline:nn { #2 }
1462        {
1463          % Here :Nx instead of :Nn ensures that \askreplymcqArgsIdsDemo
1464          % is actually evaluated instead of passed as-is
1465          \seq_put_right:Nx #1 { \askreplymcqArgsIdsDemo{##1} }
1466        }
1467    }
1468
1469  %- Defining a "Verify" button both for single and multiple MCQs
1470
1471  \seq_new:N \l_correct_seq
1472  \seq_new:N \l_wrong_seq
1473
1474  \cs_new_protected:Npn \askreplymcq__verify:nn #1 #2
1475    {
1476      %\showocg{verify:\thequizquestion}{%
1477      % ONLY USE POINT AS SEPARATOR: ERROR WITH COLON AND @ --> WHY?
1478      \showocg{verify.\thequiz.\thequizquestion}{%
1479        \begin{tikzpicture}
1480          \node[quizbutton=askreplybuttongray] (checksolutionbutton)
1481            {\strut\scriptsize\lightbf{\textsc{\sffamily\quizverifyname}}};%
1482        \end{tikzpicture}%
1483      }
1484      %\begin{ocg}{verify:\thequizquestion}{verify:\thequizquestion}{off}% verification layer
1485      \begin{ocg}{verify.\thequiz.\thequizquestion}{verify.\thequiz.\thequizquestion}{off}%
1486        verification layer
1487        \makebox[0pt][l]{%
1488          \begin{ocmd}{\Not{\And{#1,\Not{\Or{#2}}}}}% "wrong" layer (OCMD)
1489            \hspace*{0.25em}%
1490            \raisebox{5pt}{\textcolor{red!60!black}{\faTimes}}%Wrong.
1491          \end{ocmd}%
1492        }%
```

```
1492        \begin{ocmd}{\And{#1,\Not{\Or{#2}}}}% "correct" layer (OCMD)
1493          \hspace*{0.25em}%
1494          \raisebox{5pt}{\textcolor{green!60!black}{\faCheck}}%Correct.
1495        \end{ocmd}%
1496      \end{ocg}%
1497    }
1498
1499 \cs_new_protected:Npn \askreplymcqdemo__verify:nn #1 #2
1500   {
1501     %\showocg{verify:\thequizquestion}{%
1502     % ONLY USE POINT AS SEPARATOR: ERROR WITH COLON AND @ --> WHY?
1503     \showocg{verify.\thequizdemo.\themcqdemo}{%
1504       \begin{tikzpicture}
1505         \node[quizbutton=askreplybuttongray] (checksolutionbutton)
1506           {\strut\scriptsize\lightbf{\textsc{\sffamily\quizverifyname}}};%
1507       \end{tikzpicture}%
1508     }
1509     %\begin{ocg}{verify:\thequizquestion}{verify:\thequizquestion}{off}% verification layer
1510     \begin{ocg}{verify.\thequizdemo.\themcqdemo}{verify.\thequizdemo.\themcqdemo}{off}%
1511       verification layer
1512       \makebox[0pt][l]{%
1513         \begin{ocmd}{\Not{\And{#1,\Not{\Or{#2}}}}}% "wrong" layer (OCMD)
1514           \hspace*{0.25em}%
1515           \raisebox{5pt}{\textcolor{red!60!black}{\faTimes}}%Wrong.
1516         \end{ocmd}%
1517       }%
1518       \begin{ocmd}{\And{#1,\Not{\Or{#2}}}}% "correct" layer (OCMD)
1519         \hspace*{0.25em}%
1520         \raisebox{5pt}{\textcolor{green!60!black}{\faCheck}}%Correct.
1521       \end{ocmd}%
1522     \end{ocg}%
1523   }
1524
1525 \cs_generate_variant:Nn \askreplymcq__verify:nn {ff}
1526
1527 \cs_generate_variant:Nn \askreplymcqdemo__verify:nn {ff}
1528
1529 \NewDocumentCommand{\mcqverify}{ m m }{%
1530   % Syntax - #1: list of OCG ids of correct/required answer(s), comma separated
1531   %          #2: list of OCG ids of wrong answer(s), comma separated
1532   \askreplymcq_process_list:Nn \l_correct_seq { #1 }% Save OCMD IDs as LaTeX3 seq variable
1533   \askreplymcq_process_list:Nn \l_wrong_seq { #2 }% Save OCMD IDs as LaTeX3 seq variable
1534   \askreplymcq__verify:ff { \seq_use:Nn \l_correct_seq {,} } { \seq_use:Nn \l_wrong_seq {,} }
1535 }
1536
1537 \NewDocumentCommand{\mcqverifydemo}{ m m }{%
1538   % Syntax - #1: list of OCG ids of correct/required answer(s), comma separated
1539   %          #2: list of OCG ids of wrong answer(s), comma separated
1540   \askreplymcqdemo_process_list:Nn \l_correct_seq { #1 }% Save OCMD IDs as LaTeX3 seq variable
1541   \askreplymcqdemo_process_list:Nn \l_wrong_seq { #2 }% Save OCMD IDs as LaTeX3 seq variable
1542   \askreplymcqdemo__verify:ff { \seq_use:Nn \l_correct_seq {,} } { \seq_use:Nn \l_wrong_seq {,}
1543     }
1544 }
1545
1546 \ExplSyntaxOff
1547
1548 %- Defining a "Reset" button both for single and multiple MCQs: "old fashion" but works
```

```latex
1548  \NewDocumentCommand{\mcqreset}{}{%
1549    \def\ocglistreset{}%
1550    \xdef\ocglistreset{%
1551      %|ocglistreset|space verify:|thequizquestion|space showanswer:|thequizquestion}%
1552      %|ocglistreset|space verify:|thequizquestion|space showanswer:|thequiz:|thequizquestion}%
1553      \ocglistreset\space verify.\thequiz.\thequizquestion\space showanswer.\thequiz.
1554        \thequizquestion}%
1554    \foreach \X in {1,...,\value{mcqquiztotal}} {%
1555      %|xdef|ocglistreset{|ocglistreset|space mcqproposalref:|thequizquestion:|X}%
1556      \xdef\ocglistreset{\ocglistreset\space mcqproposalref.\thequiz.\thequizquestion.\X}%
1557    }%
1558    \hideocg{\ocglistreset}{%
1559      \begin{tikzpicture}
1560        \node[quizbutton=askreplybuttongray] (resetbutton)
1561          {\strut\scriptsize\textsf{\textsc{\lightbf{\quizresetname}}}};
1562      \end{tikzpicture}%
1563    }%
1564  }
1565
1566  \NewDocumentCommand{\mcqresetdemo}{}{%
1567    \def\ocglistreset{}%
1568    \xdef\ocglistreset{%
1569      \ocglistreset\space verify.\thequizdemo.\themcqdemo\space showanswer.\thequizdemo.
1570        \themcqdemo}%
1570    \foreach \X in {1,...,\value{mcqquiztotaldemo}} {%
1571      \xdef\ocglistreset{\ocglistreset\space mcqproposalref.\thequizdemo.\themcqdemo.\X}%
1572    }%
1573    \hideocg{\ocglistreset}{%
1574      \begin{tikzpicture}
1575        \node[quizbutton=askreplybuttongray] (resetbutton)
1576          {\strut\scriptsize\textsf{\textsc{\lightbf{\quizresetname}}}};
1577      \end{tikzpicture}%
1578    }%
1579  }
1580
1581  %- Defining the "Reset" button (both for single and multiple MCQs)
1582
1583  \ExplSyntaxOn
1584
1585  \NewDocumentCommand{\mcqresetButton}{m}{% AG's definition (LaTeX3): to be adapted (see \mcqreset
          )
1586    % Syntax - #1: list of OCG ids, comma separated
1587    \clist_set:Nn\l_tmpa_clist{#1} % save OCG ids as LaTeX3 clist variable
1588    \hideocg{\clist_use:Nn\l_tmpa_clist{~}}{\fbox{\strut\sffamily\quizresetname}}%
1589  }
1590
1591  \ExplSyntaxOff
1592
1593  %- Defining a "Show/Hide answer" button both for single and multiple MCQs
1594
1595  \NewDocumentCommand{\mcqdisplayanswer}{ s O{b} m D(){6pt,12pt} }{%
1596    % Syntax - #1: switch between answer in the margin (no star) and as tooltip (star)
1597    %          #2: position [b]/[c]/[t] for answer in the margin
1598    %          #3: explanation text to display
1599    %          #4: position control (<xshift-length>,<yshift-length>) for answer in as tooltip
1600    \makebox[0pt][l]{%
1601      %\actionsocg{showanswer:\thequizquestion}{}{verify:\thequizquestion}{%
1602      %\actionsocg{showanswer.\thequiz:\thequizquestion}{}{verify:\thequizquestion}{%
```

```latex
1603      \actionsocg{showanswer.\thequiz.\thequizquestion}{}{verify.\thequiz.\thequizquestion}{%
1604        \begin{tikzpicture}
1605          \node[quizbutton=askreplybuttongray] (displayshowanswerbutton)
1606            {\strut\scriptsize\textsf{\textsc{\lightbf{\quizshowanswername}}}};%
1607        \end{tikzpicture}%
1608      }%
1609    }%
1610    %\begin{ocg}{showanswer:\thequizquestion}{showanswer:\thequizquestion}{off}% show/hide answer
1611        layer
1611    %\begin{ocg}{showanswer\thequiz:\thequizquestion}{showanswer:\thequiz:\thequizquestion}{off}%
1611        show/hide answer layer
1612    \begin{ocg}{showanswer.\thequiz.\thequizquestion}{showanswer.\thequiz.\thequizquestion}{off}%
1612        show/hide answer layer
1613      \makebox[\quizanswerbuttonwidth][l]{%
1614        \begin{tikzpicture}
1615          \node[quizbutton={black!60!white}] (displayhideanswerbutton)
1616            {\strut\scriptsize\textsf{\textsc{\lightbf{\quizhideanswername}}}};%
1617        \end{tikzpicture}%
1618      }%
1619      \IfBooleanTF{#1}
1620        {\mcqtooltip{#3}(#4)}%
1621        {\mcqmarginbox[#2]{#3}}%
1622    \end{ocg}
1623  }
1624
1625  \NewDocumentCommand{\mcqdisplayanswerdemo}{ s O{b} m D(){6pt,12pt} }{%
1626    % Syntax – #1: switch between answer in the margin (no star) and as tooltip (star)
1627    %          #2: position [b]/[c]/[t] for answer in the margin
1628    %          #3: explanation text to display
1629    %          #4: position control (<xshift-length>,<yshift-length>) for answer in as tooltip
1630    \makebox[0pt][l]{%
1631      \actionsocg{showanswer.\thequizdemo.\themcqdemo}{}{verify.\thequizdemo.\themcqdemo}{%
1632        \begin{tikzpicture}
1633          \node[quizbutton=askreplybuttongray] (displayshowanswerbutton)
1634            {\strut\scriptsize\textsf{\textsc{\lightbf{\quizshowanswername}}}};%
1635        \end{tikzpicture}%
1636      }%
1637    }%
1638    \begin{ocg}{showanswer.\thequizdemo.\themcqdemo}{showanswer.\thequizdemo.\themcqdemo}{off}%
1638        show/hide answer layer
1639      \makebox[\quizanswerbuttonwidth][l]{%
1640        \begin{tikzpicture}
1641          \node[quizbutton={black!60!white}] (displayhideanswerbutton)
1642            {\strut\scriptsize\textsf{\textsc{\lightbf{\quizhideanswername}}}};%
1643        \end{tikzpicture}%
1644      }%
1645      \IfBooleanTF{#1}
1646        {\mcqtooltip{#3}(#4)}%
1647        {\mcqmarginbox[#2]{#3}}%
1648    \end{ocg}
1649  }
1650
1651  %- Defining a macro to display the answer in the margin
1652
1653  \newcommand\mcqtikzmark[1]{%
1654    \tikz[remember picture,overlay]\node[inner xsep=0pt,outer sep=0pt] (#1) {};}
1655
1656  \newlength{\quiztrianglexshift}
```

```latex
1657  \newlength{\quizuppertrianglecorner}
1658  \newlength{\quizboxhshift}
1659  \newlength{\quizboxvshift}
1660  \newlength{\quiznoteheight}
1661
1662  \newcommand\quizside{}
1663  \newcommand\quizotherside{}
1664  \newcommand\quizpointeranchor{}
1665  \newcommand\quizboxanchor{}
1666
1667  \newcounter{mcqdisplaycount}
1668
1669  %\NewDocumentCommand{\mcqmarginbox}{O{b} O{askreplythirdcolor} O{\quizexplanationname} m}{%
1670  \NewDocumentCommand{\mcqmarginbox}{O{b} m}{%
1671    \checkoddpage
1672    \ifoddpageoroneside
1673      \setlength\quiztrianglexshift{-3pt}%
1674      \setlength\quizboxhshift{\marginparsep}% Original setting (Gonzalo Medina): see \caution
1675      %\addtolength\quizboxhshift{\marginparsep}% Why? Side effect of `tcolorbox` package?
1676      \addtolength\quizboxhshift{16pt}% Because inside two tcboxes: quiz + question -> leftsep=10
          pt+6pt
1677      \addtolength\quizboxhshift{16pt}% Because inside two tcboxes: quiz + question -> rightsep=10
          pt+6pt
1678      %\addtolength\quizboxhshift{3pt}% Adding quiztrianglexshift
1679      \addtolength\quizboxhshift{-3pt}% Adding quiztrianglexshift
1680      \addtolength\quizboxhshift{-0.4pt}% Subtracting 0.5 box linewidth (thick = 0.8pt): see \tikz
          below
1681      \renewcommand{\quizside}{west}%
1682      \renewcommand{\quizotherside}{east}%
1683    \else
1684      \setlength\quiztrianglexshift{3pt}%
1685      \setlength\quizboxhshift{-\marginparsep}%
1686      \renewcommand{\quizside}{east}%
1687      \renewcommand{\quizotherside}{west}%
1688    \fi%
1689    \settoheight{\quiznoteheight}{%
1690      \ifstrempty{#2}%
1691        {\parbox{\marginparwidth-8pt-0.8pt}{%
1692          \footnotesize\ttfamily Sorry, no answer available}}%
1693        {\parbox{\marginparwidth-8pt-0.8pt}{\footnotesize #2}}%
1694    }% thick=0.8pt
1695    \stepcounter{mcqdisplaycount}%
1696    \mcqtikzmark{\themcqdisplaycount}%
1697    \if#1b\relax
1698      \renewcommand\quizpointeranchor{mcqdisplaycount\themcqdisplaycount.south \quizside}%
1699      \renewcommand\quizboxanchor{south \quizside}%
1700      \setlength\quizboxvshift{\quiznoteheight}%
1701      \addtolength\quizboxvshift{-.6\baselineskip}% Adjust the vertical shift with the text line
1702      \setlength\quizuppertrianglecorner{13pt}%
1703    \else
1704      \if#1t\relax
1705        \renewcommand\quizpointeranchor{mcqdisplaycount\themcqdisplaycount.north \quizside}%
1706        \renewcommand\quizboxanchor{north \quizside}%
1707        \setlength\quizboxvshift{-\quiznoteheight}%
1708        \addtolength\quizboxvshift{.6\baselineskip}% Adjust the vertical shift with the text line
1709        \setlength\quizuppertrianglecorner{-7pt}%
1710      \else
1711        \if#1c\relax
```

```latex
1712          \renewcommand\quizpointeranchor{mcqdisplaycount\themcqdisplaycount.\quizside}%
1713          \renewcommand\quizboxanchor{\quizside}%
1714          %\setlength\quizboxvshift{\baselineskip}% No vertical shift, just centered with the text
        line
1715          % We try here to align the bottom margin box with the one of the quiz question tcbox
1716          %\addtolength\quizboxvshift{\quiznoteheight}% Empirical/test value
1717          %\addtolength\quizboxvshift{-4pt}% bottomsep = 4pt
1718          \setlength\quizuppertrianglecorner{3pt}%
1719        \fi%
1720      \fi%
1721    \fi%
1722    \marginnote{%
1723      \begin{tikzpicture}[remember picture, overlay]
1724        \node[draw=askreplythirdcolor, line width=0.8pt, anchor=\quizside,
1725            xshift=\quizboxhshift, yshift=\quizboxvshift, inner sep=4pt]
1726        (mcqdisplaycount\themcqdisplaycount)
1727        at ([yshift=3pt]current page text area.\quizotherside|-\themcqdisplaycount)
1728        {%
1729          \ifstrempty{#2}%
1730            {\parbox{\marginparwidth-8pt-0.8pt}{%
1731              \footnotesize\ttfamily Sorry, no answer available}}%
1732            {\parbox{\marginparwidth-8pt-0.8pt}{\vskip4pt\footnotesize #2\vskip2pt}}%
1733        };% thick=0.8pt
1734        \node[fill=white, font=\color{askreplythirdcolor}\sffamily, anchor=west,
1735            inner sep=2pt, xshift=7pt, yshift=0pt]
1736        at (mcqdisplaycount\themcqdisplaycount.north west)
1737        {\small\enspace\textcolor{black}{\textsc{\footnotesize\quizexplanationname}}\enspace};
1738        \fill[askreplythirdcolor]
1739          ([yshift=\quizuppertrianglecorner]\quizpointeranchor) --
1740          ([yshift=\quizuppertrianglecorner-3pt,xshift=\quiztrianglexshift]\quizpointeranchor) --
1741          ([yshift=\quizuppertrianglecorner-6pt]\quizpointeranchor) -- cycle;
1742      \end{tikzpicture}%
1743    }%
1744 }

1745
1746 %- Defining "tooltip" commands to display answers (the margin displaying is not always relevant)
1747
1748 %--- Note: How to define tooltips
1749 %--------------------------------
1750 %- For the moment being (fall 2019), only AR and Evince viewer supports tooltips (like for OCGs)
        .
1751 %- From: https://tex.stackexchange.com/questions/155518/tooltip-that-works-with-all-pdf-readers
1752 %- Important update: since spring 2020 OCG, OCMG and JavaScript are supported by Okular!
1753 %- See: https://tex.stackexchange.com/questions/235139/using-the-animate-package-without-adobe
1754 %-----

1755
1756 \ExplSyntaxOn
1757 \let\askreplytpPdfLink\pbs_pdflink:nn
1758 \let\askreplycListSet\clist_set:Nn
1759 \let\askreplycListItem\clist_item:Nn
1760 \ExplSyntaxOff

1761
1762 \newsavebox\askreplytiptext\newcounter{askreplytcnt}

1763
1764 \newlength{\askreplywhatsleft}
1765 \newlength{\askreplytipshift}

1766
1767 \NewDocumentCommand{\mcqtooltip}{ m D(){0pt,0pt} }{%
```

```
1768    \leavevmode%
1769    \sbox\askreplytiptext{%
1770      \tcbox[enhanced, colframe=askreplythirdcolor, colback=white, boxrule=0.8pt,
1771          attach boxed title to top left={xshift=7pt, yshift=-\tcboxedtitleheight/2},
1772          boxed title style={boxrule=0pt,colframe=white,colback=white,
1773            boxsep=0pt, top=4pt, bottom=4pt},
1774          coltitle=black, %toptitle=9pt, bottomtitle=0pt,
1775          title=\quizexplanationname, fonttitle=\footnotesize\scshape\sffamily,
1776          boxsep=2pt, left=2pt, right=2pt, top=5pt, bottom=2pt, sharp corners]{%
1777        \ifstrempty{#1}
1778          {\parbox{\marginparwidth-8pt-0.8pt}{\footnotesize\ttfamily Sorry, no answer available}}%
1779          {\parbox{\marginparwidth-8pt-0.8pt}{\footnotesize #1}}%
1780      }%
1781    }%
1782    \askreplycListSet\askreplytpOffsets{#2}%
1783    \edef\askreplytwd{\the\wd\askreplytiptext}%
1784    \edef\askreplyht{\the\ht\askreplytiptext}%
1785    \edef\askreplytdp{\the\dp\askreplytiptext}%
1786    \askreplytipshift=0pt%
1787    %OCG-based (that is, all non-draggable) boxes should not extend beyond the
1788    %current column as they may get overlaid by text in the neighbouring column
1789    %\setlength\askreplywhatsleft{\linegoal}%
1790    %\ifdim\askreplywhatsleft<\dimexpr\askreplytwd+\askreplycListItem\askreplytpOffsets{1}\relax%
1791    %  \setlength\askreplytipshift{\askreplywhatsleft-\twd-\askreplycListItem\askreplytpOffsets
1792         {1}}%
1792    %\fi%
1793    \raisebox{\heightof{#1}+\askreplytdp+\askreplycListItem\askreplytpOffsets{2}}[0pt][0pt]{%
1794      \makebox[0pt][l]{%
1795        \hspace{\dimexpr\askreplytipshift+\askreplycListItem\askreplytpOffsets{1}\relax}%
1796        \usebox{\askreplytiptext}%
1797      }%
1798    }%
1799 }
1800
1801 \NewDocumentCommand{\mcqtooltiporiginal}% Simplified version for Evince (and AR and new Okular)
1802    { O{\ifdefined\@linkcolor\@linkcolor\else blue\fi} m O{yellow!20} m O{0pt,0pt} }{%
1803    \leavevmode%
1804    %for variants with two and more stars, put tip box on a PDF Layer (OCG)
1805    \ocgbase@new@ocg{askreplytipOCG.\theaskreplytcnt}{%
1806      /Print<</PrintState/OFF>>/Export<</ExportState/OFF>>%
1807    }{false}%
1808    \xdef\askreplytpTipOcg{\ocgbase@last@ocg}%
1809    %prevent simultaneous visibility of multiple non-draggable tooltips
1810    \ocgbase@add@ocg@to@radiobtn@grp{askreplytool@tips}{\ocgbase@last@ocg}%
1811    \askreplytpPdfLink{%
1812      /Subtype/Link/Border[0 0 0]/A <</S/SetOCGState/State [/Toggle \askreplytpTipOcg]>>
1813    }{\textcolor{#1}{#2}}%
1814    \sbox\askreplytiptext{%
1815      \ocgbase@oc@bdc{\askreplytpTipOcg}%
1816      \ocgbase@open@stack@push{\askreplytpTipOcg}%
1817      %\fcolorbox{black}{#3}{#4}%
1818      \tcbox[colframe=black,colback=#3,size=fbox,arc=1ex,sharp corners=southwest]{#4}%
1819      \ocgbase@oc@emc\ocgbase@open@stack@pop\askreplytpNull%
1820    }%
1821    \askreplycListSet\askreplytpOffsets{#5}%
1822    \edef\askreplytwd{\the\wd\askreplytiptext}%
1823    \edef\askreplyht{\the\ht\askreplytiptext}%
1824    \edef\askreplytdp{\the\dp\askreplytiptext}%
```

```latex
    \askreplytipshift=0pt%
    %OCG-based (that is, all non-draggable) boxes should not extend beyond the
    %current column as they may get overlaid by text in the neighbouring column
    \setlength\askreplywhatsleft{\linegoal}%
    \ifdim\askreplywhatsleft<\dimexpr\askreplytwd+\cListItem\askreplytpOffsets{1}\relax%
      \setlength\askreplytipshift{\whatsleft-\twd-\askreplycListItem\askreplytpOffsets{1}}%
    \fi%
    \raisebox{\heightof{#2}+\askreplytdp+\askreplycListItem\askreplytpOffsets{2}}[0pt][0pt]{%
      \makebox[0pt][l]{%
        \hspace{\dimexpr\askreplytipshift+\askreplycListItem\askreplytpOffsets{1}\relax}%
        \usebox{\askreplytiptext}%
      }%
    }%
    \stepcounter{askreplytcnt}%
}

%- Setting the user level environments (see below in case `assignpoints' package is loaded or
    not)
%
    -------------------------------------------------------------------------------------------


%- LaTeX2e way, see:
%- https://tex.stackexchange.com/questions/9035/[...]
%-   [...]how-to-pass-an-optional-argument-to-an-environment-with-verbatim-content

%- Setting the display of exercise levels: none, basic, intermediate and advanced

\newtoggle{askreply@level@display@on}

\NewDocumentCommand{\askreply@level@display}{  }{
  \iftoggle{askreply@level@display@on}{%
    \node[xshift=8pt, inner sep=0pt, minimum size=2.5mm, circle, %radius=4mm,
        ball color=\asreply@firstlevel@color] (firstlevel) at (frame.east) {};
    \node[circle, inner sep=0pt, minimum size=2.5mm, %radius=4mm,
        right=1pt of firstlevel, ball color=\asreply@secondlevel@color] (secondlevel) {};
    \node[circle, inner sep=0pt, minimum size=2.5mm, %radius=4mm,
        right=1pt of secondlevel, ball color=\asreply@thirdlevel@color] (thirdlevel) {};
  }{}%\node[xshift=16pt, circle, radius=2pt, ball color=firstcolor] (firstlevel) at (frame.east)
    {};}%
}

\AtBeginEnvironment{exercise}{\small}
\AtBeginEnvironment{quiz}{\small}
\AtBeginEnvironment{solution}{\small}

\newcommand\askreplytikzmark[1]{%
  \tikz[remember picture,overlay]\node (#1) {\phantom{Hg}};%
}
\newlength{\exerciseheight}
%\newlength{\askreply@detect@boxheight}

\newcommand\connect[3]{%
\tikz[remember picture,overlay]
  \pgfextracty{\global#1}{\pgfpointanchor{#2}{north}}
  \pgfextracty{\pgf@ya}{\pgfpointanchor{#3}{south}}
  \pgfmathadd{#1}{\pgf@ya}
  \let#1\pgfmathresult
```

```
1879    %\setlength{exerciseheight}{\pgfmathresult}
1880    %\addtolength{\exerciseheight}{-\pgf@ya}
1881    \draw[->,red,>=latex] (#2.north) -- (#3.south);%
1882    %Out: \the#1
1883  }
1884  \newcommand\getheightofnode[2]{
1885      \pgfextracty{#1}{\pgfpointanchor{#2}{north}}
1886      \pgfextracty{\pgf@ya}{\pgfpointanchor{#2}{south}}
1887      \addtolength{#1}{-\pgf@ya}
1888  }

1890  \newlength{\parline}
1891  \newlength{\paroutindent}
1892  \newlength{\lineheight}
1893  \setlength{\lineheight}{\heightof{abcdefghijklmnoprstuvwxyz}}

1895  \newcommand{\mycountlines}[1]{%
1896      \setlength{\paroutindent}{\expandafter\parindent}
1897      \setlength{\parline}{\heightof{\noindent\begin{minipage}{\linewidth}%
1898                  \setlength{\parindent}{\paroutindent}#1\end{minipage}}}%
1899      \pgfmathparse{round(\parline / (0.9*\lineheight))}
1900      #1\par \noindent \texttt{line count: (\pgfmathresult)}
1901  }

1903  %- https://tex.stackexchange.com/questions/402779/[...]
1904  %-    [...]how-can-i-calculate-a-number-of-lines-needed-to-fit-the-text/
1905  \newcounter{askreplycountlines}
1906  \newcommand{\askreplynumberoflines}[2][\linewidth]{% #1=width (optional), #2=text
1907    \bgroup
1908    \hsize=#1\relax
1909    \clubpenalty=0
1910    \widowpenalty=0
1911    \displaywidowpenalty=0
1912    \predisplaypenalty=0
1913    \postdisplaypenalty=0
1914    \interlinepenalty=0
1915    \setbox0=\vbox{#2}%
1916    \setcounter{askreplycountlines}{0}%
1917    \loop\ifdim\ht0>0pt
1918      \stepcounter{askreplycountlines}%
1919      \setbox1=\vsplit0 to 0pt
1920    \repeat
1921  \egroup}% \theaskreplycountlines

1923  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1924  %------ Typical usage
1925  %-
1926  %- Exercise environment
1927  %----------------------
1928  %- \begin{exercise}[<options comma separated>]
1929  %-    Stuff...
1930  %-    \begin{subexercise}[<tcolorbox options>]{<optional title>}
1931  %-      Stuff...
1932  %-    \end{subexercise}
1933  %-    \begin{subexercise}[<tcolorbox options>]{<optional title>}
1934  %-      Stuff...
1935  %-    \end{subexercise}
1936  %-    Stuff...
```

```
1937  %- \end{exercise}
1938  %- Options: display=true/false (default=true) ; storing=true/false (default=true)
1939  %-          list=true/false (default=true) adding a entry in the list of exercises
1940  %-          title={<optional title>} (no default), before skip=<length>, after skip=<length>,
1941  %-          level=<basic>/<intermediate>/<advanced> (no default)
1942  %-
1943  %- Solution environment
1944  %---------------------
1945  %- \begin{solution}[<options comma separated>]
1946  %-    Stuff...
1947  %-    \begin{subsolution}[<tcolorbox options>]
1948  %-      Stuff...
1949  %-    \end{subsolution}
1950  %-    \begin{subsolution}[<tcolorbox options>]
1951  %-      Stuff...
1952  %-    \end{subsolution}
1953  %-    Stuff...
1954  %- \end{solution}
1955  %- Options: display=true/false (default=true) ; storing=true/false (default=true)
1956  %-          ID=<number of the exercise> (no default), before skip=<length>, after skip=<length>
1957  %- The solution ID number is automatically set in the sequence of the exercises. But in case
1958  %- an exercise has no solution, one must restart the sequence with the correct ID number.
1959  %-
1960  %- Quiz environment
1961  %-----------------
1962  %- \begin{quiz}[<options comma separated>]
1963  %- \begin{quizquestion}<#1>[#2]{#3}{#4}{#5}(#6)<#7> (see below)
1964  %-    \mcqprosal{stuff}
1965  %-    etc.
1966  %- \end{quizquestion}
1967  %- \begin{quizquestion*}<#1>[#2]{#3}{#4}{#5}(#6)<#7> (see below)
1968  %-    \mcqprosal{stuff}
1969  %-    etc.
1970  %- \end{quizquestion*}
1971  %- \end{quiz}
1972  %- Options: display=true/false (default=true) ; storing=true/false (default=true)
1973  %-          list=true/false (default=true) adding a entry in the list of quizzes
1974  %-          title={<optional title>} (no default), before skip=<length>, after skip=<length>
1975  %-
1976  %- Quizquestion environment (multiple answers)
1977  %-------------------------------------------
1978  %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
1979  %         [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
1980  %         {#3} = Mandatory correct answer numbers comma separated
1981  %         {#4} = Mandatory wrong answer numbers comma separated
1982  %         {#5} = Optional title
1983  %         (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
1984  %         <#7> = Optional explanation text of the answer (usually given ;-)
1985  %- \begin{quizquestion}<#1>[#2]{#3}{#4}{#5}(#6)<#7>
1986  %-    \mcqproposal{stuff-one}
1987  %-    \mcqproposal{stuff-two}
1988  %-    \mcqproposal{stuff-three}
1989  %-    \mcqproposal{stuff-four}
1990  %-    etc.
1991  %- \end{quizquestion}
1992  %-
1993  %- Quizquestion* environment (single exclusive answer)
1994  %---------------------------------------------------
```

51

```
1995  %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
1996  %            [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
1997  %            {#3} = Mandatory correct answer number (only one)
1998  %            {#4} = Mandatory wrong answer numbers comma separated
1999  %            {#5} = Optional title
2000  %            (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
2001  %            <#7> = Optional explanation text of the answer (usually given ;-)
2002  %- \begin{quizquestion*}<#1>[#2]{#3}{#4}{#5}(#6)<#7>
2003  %-   \mcqproposal{stuff-one}
2004  %-   \mcqproposal{stuff-two}
2005  %-   \mcqproposal{stuff-three}
2006  %-   \mcqproposal{stuff-four}
2007  %-   etc.
2008  %- \end{quizquestion*}
2009  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
2010
2011  \iftoggle{askreply@points}{% With `assignpoints' package
2012    %
2013    %- Exercise environment
2014    %---------------------
2015    \RenewDocumentEnvironment{exercise}{  }{%
2016      \catcode`\^^M=\active
2017      \@ifnextchar[%
2018        {\catcode`\^^M=5 \exercise@start}
2019        {\catcode`\^^M=5 \exercise@start[]}
2020    }{%
2021      \endVerbatimOut%
2022      %\VerbatimInput{\askreply@outfilename}%
2023      %\settototalheight{\askreply@detect@boxheight}{%
2024      %  \parbox{\linewidth}{%
2025      %    \input{\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}
2026      %  }%
2027      %}
2028      \ifaskreply@display
2029        \ifdefstring{\askreply@level}{basic}%
2030          {%
2031            \toggletrue{askreply@level@display@on}%
2032            \gdef\asreply@firstlevel@color{askreplythirdcolor}%
2033            \gdef\asreply@secondlevel@color{lightgray}%
2034            \gdef\asreply@thirdlevel@color{lightgray}%
2035            %\marginnote{level=basic}%
2036          }%
2037          {\ifdefstring{\askreply@level}{intermediate}%
2038            {%
2039              \toggletrue{askreply@level@display@on}%
2040              \gdef\asreply@firstlevel@color{lightgray}%
2041              \gdef\asreply@secondlevel@color{askreplythirdcolor}%
2042              \gdef\asreply@thirdlevel@color{lightgray}%
2043              %\marginnote{level=intermediate}%
2044            }%
2045            {\ifdefstring{\askreply@level}{advanced}%
2046              {%
2047                \toggletrue{askreply@level@display@on}%
2048                \gdef\asreply@firstlevel@color{lightgray}%
2049                \gdef\asreply@secondlevel@color{lightgray}%
2050                \gdef\asreply@thirdlevel@color{askreplythirdcolor}%
2051                %\marginnote{level=advanced}%
2052              }%
```

```
2053              {}%\marginnote{level=none}}%
2054            }%
2055          }%
2056        \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip]
2057          % Empty versus non-empty exercise title
2058          \iftoggle{assignpoints@checkemptystring}%
2059            {\strut\textsf{\lightbf{\normalsize\exercisename\space\currentexercisenumber}}%
2060                \hfill\textsf{\lightbf{\small\displaypoints*[exercise]{\currentexercisenumber}}}%
2061            }%
2062            {\strut\textsf{\lightbf{\normalsize\scshape\exercisename\space\currentexercisenumber}}
        %
2063              \textsf{\lightbf{\normalsize\scshape\enspace\textemdash\enspace
        \currentexercisetitle}}%
2064              \hfill\textsf{\lightbf{%
2065                \small\scshape\displaypoints*[exercise]{\currentexercisenumber}}}}%
2066            }%
2067        \end{tcolorbox}\nopagebreak%
2068        \askreplybox
2069          \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{
        askreplyfirstcolor}}%
2070              \input{\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2071            \askreplynumberoflines{%
2072              \let\pointsoriginal\points% Not to count points twice
2073              \let\points\phantom%
2074              \input{\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2075              \let\points\pointsoriginal
2076            }%
2077            %NoL: \theaskreplycountlines
2078            \par\phantomtext%
2079            %\vspace{-.5\baselineskip}%
2080            \ifdefempty{\solutionID}%
2081              {\ifnumequal{\theaskreplycountlines}{1}{\par\vspace{-0.6\baselineskip}}{}}%
2082              {\par\hfill\raisebox{-2.5pt}{%
2083                  \textcolor{askreplysecondcolor}{%
2084                    %SolutionID: \solutionID\quad%
2085                    \itshape\footnotesize{\normalfont\faSquare}%
2086                      \enspace Solution\space page~\pageref{solution:\solutionID}%
2087                      %\enspace Solution page~\pageref{solution:\theexercise}%
2088                  }}%
2089              }%
2090          \endtikzpagelayer
2091          %\par\vspace{\dimexpr.5\baselineskip\relax}%
2092        \endaskreplybox
2093        %\zsaveposy{stopexercise}
2094        %Space: \the\dimexpr\zposy{startexercise}sp-\zposy{stopexercise}sp\relax
2095        \vspace{\askreply@afterskip}%
2096      \fi
2097      \ifaskreply@storing
2098        \ifx\askreply@title\empty%
2099          \askreply@filecopytoenv%
2100            {\askreply@outfilename%{\exercisesdir\jobname-exercise-body-\askreplytwodigits{
        \theexercise}.ltx}%
2101            {\exercisesdir\jobname-exercise-\askreplytwodigits{\theexercise}.env}%
2102            {\string\begin{exercise}}%
2103            {\string\end{exercise}}%
2104            {\string[storing=false]}%
2105        \else
2106          \askreply@filecopytoenv%
```

```
2107              {\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2108              {\exercisesdir\jobname-exercise-\askreplytwodigits{\theexercise}.env}%
2109              {\string\begin{exercise}}%
2110              {\string\end{exercise}}%
2111              {\string[storing=false, title=\askreply@title]}%
2112          \fi
2113        \fi
2114        \ifaskreply@list
2115          \addcontentsline{loe}{exercise}{\protect\numberline{\theexercise}\currentexercisetitle}%
2116        \fi
2117        \setcounter{assignpoints@maxsubexercisecount}{\theassignpoints@subexercisecount}%
2118        \assignpoints@storevaluetoaux%
2119          {\assignpointsprefix{exercise}@exercisetitle}%
2120          {\theassignpoints@exercisecount}%
2121          {\currentexercisetitle}%
2122        \assignpoints@storevaluetoaux%
2123          {\assignpointsprefix{exercise}@numberofsubexercises}%
2124          {\theassignpoints@exercisecount}%
2125          {\theassignpoints@maxsubexercisecount}%
2126        \assignpoints@storevaluetoaux%
2127          {\assignpointsprefix{exercise}@points}%
2128          {\theassignpoints@exercisecount}%
2129          {\strip@pt\assignpoints@currentexercisepoints}% https://tex.stackexchange.com/questions
                  /2810/
2130        \global\boolfalse{assignpoints@inexercise}%
2131        \togglefalse{assignpoints@checkemptystring}%
2132        \togglefalse{askreply@level@display@on}%
2133      }
2134      \def\exercise@start[#1]{%
2135        \pgfkeys{/askreply/.cd, #1}%
2136        \ifbool{assignpoints@inexercise}%
2137          {\PackageError{assignpoints}{You cannot nest exercise environments}}%
2138          {}%
2139        \ifbool{assignpoints@exercise@layoutdefined}{}{%
2140          \PackageError{assignpoints}%
2141            {Option `customlayout' requires you to define an exercise layout using
2142            at least `\string\AtBeginExercise{...}'}%
2143        }%
2144        \global\booltrue{assignpoints@inexercise}%
2145        \stepcounter{exercise}%
2146        \getenvID[exercise]{\theexercise}%
2147        \getenvID[solution]{\theexercise}%
2148        \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2149        %\label{exercise:\theassignpoints@exercisecount}
2150        \phantomsection\label{exercise:\theexercise}% To have correct \pageref link (see TeX.SX
                  /49061)
2151        \setlength{\assignpoints@currentexercisepoints}{0pt}%
2152        \global\assignpoints@currentexercisepoints=\assignpoints@currentexercisepoints%
2153        \ifx\askreply@title\@empty% WORKS!
2154          %\textbf{TRUE}
2155          \toggletrue{assignpoints@checkemptystring}%
2156        \else%
2157          %\textbf{FALSE}
2158          \togglefalse{assignpoints@checkemptystring}%
2159          \renewcommand{\currentexercisetitle}{\askreply@title}%
2160        \fi%
2161        %\renewcommand{\currentexercisetitle}{\askreply@title}%
2162        %\ifstrempty{\currentexercisetitle}% DOES NOT WORK! WHY?
```

54

```latex
2163    %  {\toggletrue{assignpoints@checkemptystring}\textbf{TRUE}}%
2164    %  {\togglefalse{assignpoints@checkemptystring}\textbf{FALSE}}%
2165    %\ifnum\c@exercise=0
2166    %  \setcounter{assignpoints@exercisecount}{0}% Exercise 0 is for example
2167    %  \setcounter{assignpoints@totalexercisecount}{0}%
2168    %\else
2169      \stepcounter{assignpoints@exercisecount}% Starting the numbering from "1"
2170      \stepcounter{assignpoints@totalexercisecount}%
2171    %\fi
2172    \ifcsname assignpoints@exercise@numberofsubexercises@\currentexercisenumber\endcsname%
2173      \renewcommand{\numberofsubexercises}{%
2174        \assignpoints@readvaluefromaux{exercise}{numberofsubexercises@\currentexercisenumber}}%
2175    \fi%
2176    \ifx\askreply@envsymbol\@empty%
2177      \renewcommand{\envsymbol}{%
2178        \normalfont\faIcon{laptop-code}}% \faIcon{feather-alt}} \faPenFancy \faMarker
2179    \else%
2180      \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2181    \fi%
2182    \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2183    \def\askreply@outfilename{%
2184      \exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2185    \VerbatimOut{\askreply@outfilename}%
2186  }
2187  \NewDocumentEnvironment{exercise*}{ o }{% Solely (no reference) or demonstration exercise
2188    \pgfkeys{/askreply/.cd, #1}%
2189    \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2190    \ifx\askreply@title\@empty% WORKS!
2191      \toggletrue{assignpoints@checkemptystring}%
2192    \else
2193      \togglefalse{assignpoints@checkemptystring}%
2194      \renewcommand{\currentexercisetitle}{\askreply@title}%
2195    \fi
2196    \ifx\askreply@envsymbol\@empty
2197      \renewcommand{\envsymbol}{%
2198        \normalfont\faIcon{laptop-code}}% \faIcon{feather-alt}} \faPenFancy \faMarker
2199    \else
2200      \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2201    \fi
2202    \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2203    \ifdefstring{\askreply@level}{basic}%
2204      {%
2205        \toggletrue{askreply@level@display@on}%
2206        \gdef\asreply@firstlevel@color{askreplythirdcolor}%
2207        \gdef\asreply@secondlevel@color{lightgray}%
2208        \gdef\asreply@thirdlevel@color{lightgray}%
2209      }%
2210      {\ifdefstring{\askreply@level}{intermediate}%
2211        {%
2212          \toggletrue{askreply@level@display@on}%
2213          \gdef\asreply@firstlevel@color{lightgray}%
2214          \gdef\asreply@secondlevel@color{askreplythirdcolor}%
2215          \gdef\asreply@thirdlevel@color{lightgray}%
2216        }%
2217        {\ifdefstring{\askreply@level}{advanced}%
2218          {%
2219            \toggletrue{askreply@level@display@on}%
2220            \gdef\asreply@firstlevel@color{lightgray}%
```

55

```latex
2221              \gdef\asreply@secondlevel@color{lightgray}%
2222              \gdef\asreply@thirdlevel@color{askreplythirdcolor}%
2223           }%
2224           {}% level=none
2225        }%
2226      }%
2227    \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\asreply@beforeskip]
2228      % Empty versus non-empty exercise title
2229      \iftoggle{assignpoints@checkemptystring}%
2230         {\strut\textsf{\lightbf{\normalsize\exercisename\hfill{\small\askreply@editpoints}}}}%
2231         {\strut\textsf{\lightbf{\normalsize\currentexercisetitle\hfill{\small
         \askreply@editpoints}}}}%
2232    \end{tcolorbox}\nopagebreak%
2233    \askreplybox%
2234      \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{askreplyfirstcolor}
         }%
2235         \small
2236  }{%
2237         \par\phantomtext%
2238         %\par\vspace{-0.5\baselineskip}%
2239      \endtikzpagelayer
2240      %\par\vspace{\baselineskip}%
2241    \endaskreplybox
2242    \vspace{\askreply@afterskip}%
2243    \togglefalse{assignpoints@checkemptystring}%
2244    \togglefalse{askreply@level@display@on}%
2245  }
2246  %
2247  %- Subexercise environment
2248  %-------------------------
2249  \AtBeginSubexercise{\begin{tcolorbox}[subexercisepoints]}
2250  \AtEndSubexercise{\end{tcolorbox}}
2251  \RenewDocumentEnvironment{subexercise}{ O{} }{%
2252    \pgfkeys{/askreply/.cd, #1}%
2253    \ifbool{assignpoints@insubexercise}%
2254      {\PackageError{assignpoints}{You cannot nest subexercise environments}}%
2255      {}%
2256    \ifbool{assignpoints@subexercise@layoutdefined}{}{%
2257      \PackageError{assignpoints}{Option `customlayout' requires you to define a subexercise
2258                                  layout using at least `\string\AtBeginSubexercise{...}'}
2259    }%
2260    \global\booltrue{assignpoints@insubexercise}%
2261    \setlength{\assignpoints@currentsubexercisepoints}{0pt}%
2262    \global\assignpoints@currentsubexercisepoints=\assignpoints@currentsubexercisepoints%
2263    \ifx\askreply@title\@empty
2264      \toggletrue{assignpoints@checkemptystring}%
2265    \else
2266      \togglefalse{assignpoints@checkemptystring}%
2267      \renewcommand{\currentsubexercisetitle}{\askreply@title}%
2268    \fi
2269    \stepcounter{assignpoints@subexercisecount}% Starting the numbering from "1"
2270    \exercisepoints@sub@begin%
2271    %\begin{tcolorbox}[subexercisepoints, #1]
2272  }{%
2273    %\end{tcolorbox}%
2274    \exercisepoints@sub@end%
2275    \assignpoints@storevaluetoaux%
2276      {\assignpointprefix{subexercise}@title}%
```

```
2277        {\theassignpoints@exercisecount.\theassignpoints@subexercisecount}%
2278        {\currentsubexercisetitle}%
2279      \assignpoints@storevaluetoaux%
2280        {\assignpointsprefix{exercise}@points}%
2281        {\theassignpoints@exercisecount.\theassignpoints@subexercisecount}%
2282        {\strip@pt\assignpoints@currentsubexercisepoints}% https://tex.stackexchange.com/questions
          /2810/
2283      \global\boolfalse{assignpoints@insubexercise}%
2284      \togglefalse{assignpoints@checkemptystring}%
2285    }
2286    %
2287    %- Solution environment
2288    %---------------------
2289    \RenewDocumentEnvironment{solution}{  }{%
2290      \catcode`\^^M=\active
2291      \@ifnextchar[%
2292          {\catcode`\^^M=5 \solution@start}
2293          {\catcode`\^^M=5 \solution@start[]}
2294    }{%
2295      \endVerbatimOut%
2296      %\VerbatimInput{\askreply@outfilename}%
2297      \ifaskreply@display
2298        %\vspace{\askreply@beforeskip}%
2299        \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
2300                        colback=askreplysecondcolor!75!black, colframe=askreplysecondcolor]
2301        % Empty versus non-empty solution title
2302        \ifstrempty{\currentexercisetitle}%
2303          {\strut\textsf{\lightbf{%
2304            \normalsize\scshape\solutionname\space\theassignpoints@solutioncount\space}}%
2305              \hfill{\small(\exercisenamenocap\space\hyperlink{\exerciseID}{\thesolution},\space
          %
2306              page\space\pageref{exercise:\thesolution})}}%
2307          }%
2308          {\strut\textsf{\lightbf{%
2309            \normalsize\scshape\solutionname\space\theassignpoints@solutioncount\space}}%
2310              \textsf{\lightbf{%
2311                \normalsize\scshape\enspace\textemdash\enspace\currentexercisetitle\space}}%
2312              \textsf{\lightbf{\enspace{\small(page\space\pageref{exercise:\thesolution})}}}%
2313              \hfill\textsf{\lightbf{\small\scshape%
2314                \displaypoints*[exercise]{\theassignpoints@solutioncount}}}%
2315          }%
2316        \end{tcolorbox}\nopagebreak
2317        \askreplybox%
2318          \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{
          askreplysecondcolor}}%
2319          \input{\exercisesdir\jobname-solution-body-\askreplytwodigits{\thesolution}.ltx}
2320          \askreplynumberoflines{\input{\askreply@outfilename}}%
2321          %NoL: \theaskreplycountlines
2322          \ifnumequal{\theaskreplycountlines}{1}{\par\vspace{0.4\baselineskip}}{}%
2323          \par\phantomtext%
2324        \endtikzpagelayer
2325      \endaskreplybox
2326      \vspace{\askreply@afterskip}%
2327    \fi
2328    \ifaskreply@storing
2329      \askreply@filecopytoenv%
2330        {\exercisesdir\jobname-solution-body-\askreplytwodigits{\thesolution}.ltx}%
2331        {\exercisesdir\jobname-solution-\askreplytwodigits{\thesolution}.env}%
```

```latex
2332              {\string\begin{solution}}%
2333              {\string\end{solution}}%
2334              {\string[storing=false]}%
2335         \fi
2336       %\ifx\askreply@ID\empty%
2337          \askreply@storevaluetoaux{exercise@solutionID}{\thesolution}{ID:\thesolution}%
2338       %\else
2339       %  \askreply@storevaluetoaux{exercise@solutionID}{\askreply@ID}{ID:\askreply@ID}%
2340       %\fi
2341       \global\boolfalse{assignpoints@insolution}%
2342    }
2343    \def\solution@start[#1]{%
2344       \pgfkeys{/askreply/.cd, #1}%
2345       \ifbool{assignpoints@insolution}%
2346         {\PackageError{assignpoints}{You cannot nest solution environments}}%
2347         {}%
2348       \ifbool{assignpoints@solution@layoutdefined}{}{%
2349         \PackageError{assignpoints}%
2350            {Option `customlayout' requires you to define an solution layout using
2351             at least `\string\AtBeginSolution{...}'}%
2352       }%
2353       \global\booltrue{assignpoints@insolution}%
2354       \ifx\askreply@ID\empty%
2355         %\ifnumequal{\value{solution}}{\value{exercise}}%
2356         %  {\setcounter{solution}{\value{exercise}}}%
2357         %  {%
2358         %    \ifnumless{\value{solution}}{\value{exercise}}%
2359         %      {\setcounter{solution}{\value{exercise}}}%
2360         %      {\PackageWarning{askreply}{The solution counter must be set with ID}}%
2361         %  }%
2362         %\getenvID[exercise]{\thesolution}%
2363         \stepcounter{solution}%
2364         \getenvID[solution]{\thesolution}%
2365       \else
2366         %\getenvID[exercise]{\thesolution}%
2367         \setcounter{solution}{\askreply@ID}%
2368         \getenvID[solution]{\thesolution}%
2369       \fi
2370       \stepcounter{solutionnumber}%
2371       \hypersetup{unicode, pdfborder=0 0 0, linkcolor=white}%
2372       %\hypertarget{\solutionID}{}%
2373       \phantomsection\label{solution:\solutionID}%
2374       \ifx\askreply@envsymbol\@empty
2375         \renewcommand{\envsymbol}{\normalfont\faLightbulb}%
2376       \else
2377         \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2378       \fi
2379       \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2380       %\par\vspace{\baselineskip}
2381       \ifbool{assignpoints@inexercise}
2382         {\setcounter{assignpoints@solutioncount}{\theassignpoints@exercisecount}}%
2383         {\setcounter{assignpoints@solutioncount}{\thesolution}}
2384    %- Adding a "hard" solution reference (not a label but having the same functionality)
2385    %- The aim is to have control on the display if there is no reference
2386       \assignpoints@storevaluetoaux%
2387         {\assignpointsprefix{solution}@reference}%
2388         {\theassignpoints@solutioncount}%
2389         {\theassignpoints@solutioncount}%
```

58

```
2390       \gettitle[exercise]{\theassignpoints@solutioncount}%
2391       \def\askreply@outfilename{%
2392         \exercisesdir\jobname-solution-body-\askreplytwodigits{\thesolution}.ltx}%
2393       \VerbatimOut{\askreply@outfilename}%
2394     }
2395     \NewDocumentEnvironment{solution*}{ o }{% Solely (no reference) or demonstration exercise
2396       \pgfkeys{/askreply/.cd, #1}%
2397       \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2398       \ifx\askreply@title\@empty% WORKS!
2399         \toggletrue{assignpoints@checkemptystring}%
2400       \else
2401         \togglefalse{assignpoints@checkemptystring}%
2402         \renewcommand{\currentexercisetitle}{\askreply@title}%
2403       \fi
2404       \ifx\askreply@envsymbol\@empty
2405         \renewcommand{\envsymbol}{\normalfont\faLightbulb}%
2406       \else
2407         \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2408       \fi
2409       \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2410       \ifdefstring{\askreply@level}{basic}%
2411         {%
2412           \toggletrue{askreply@level@display@on}%
2413           \gdef\asreply@firstlevel@color{askreplythirdcolor}%
2414           \gdef\asreply@secondlevel@color{lightgray}%
2415           \gdef\asreply@thirdlevel@color{lightgray}%
2416         }%
2417         {\ifdefstring{\askreply@level}{intermediate}%
2418           {%
2419             \toggletrue{askreply@level@display@on}%
2420             \gdef\asreply@firstlevel@color{lightgray}%
2421             \gdef\asreply@secondlevel@color{askreplythirdcolor}%
2422             \gdef\asreply@thirdlevel@color{lightgray}%
2423           }%
2424           {\ifdefstring{\askreply@level}{advanced}%
2425             {%
2426               \toggletrue{askreply@level@display@on}%
2427               \gdef\asreply@firstlevel@color{lightgray}%
2428               \gdef\asreply@secondlevel@color{lightgray}%
2429               \gdef\asreply@thirdlevel@color{askreplythirdcolor}%
2430             }%
2431             {}% level=none
2432           }%
2433         }%
2434       \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
2435                         colback=askreplysecondcolor!75!black, colframe=askreplysecondcolor]
2436     %\begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip]
2437       % Empty versus non-empty exercise title
2438       \iftoggle{assignpoints@checkemptystring}%
2439         {\strut\lightbf{\solutionname\hfill{\small\askreply@editpoints}}}%
2440         {\strut\lightbf{\currentexercisetitle\hfill{\small\askreply@editpoints}}}%
2441       \end{tcolorbox}\nopagebreak%
2442       \askreplybox%
2443         \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{askreplyfirstcolor}
2444         }%
2445           \small
2446     }{%
2446           \par\phantomtext%
```

```latex
2447        %\vspace{-.5\baselineskip}%
2448      \endtikzpagelayer
2449      %\par\vspace{\dimexpr.5\baselineskip\relax}%
2450    \endaskreplybox
2451    \vspace{\askreply@afterskip}%
2452    \togglefalse{assignpoints@checkemptystring}%
2453    \togglefalse{askreply@level@display@on}%
2454  }
2455  %- Subsolution environment
2456  %-----------------------
2457  \AtBeginSubsolution{\begin{tcolorbox}[subsolutionpoints]]
2458  \AtEndSubsolution{\end{tcolorbox}}
2459  \RenewDocumentEnvironment{subsolution}{ O{} }{%
2460    \ifbool{assignpoints@insubsolution}%
2461      {\PackageError{assignpoints}{You cannot nest `subsolution' environments}}%
2462      {}%
2463    \ifbool{assignpoints@subsolution@layoutdefined}{}{%
2464      \PackageError{assignpoints}%
2465        {Option `customlayout' requires you to define an `subsolution' layout using
2466        at least `\string\AtBeginSubsolution{...}'}%
2467    }%
2468    \global\booltrue{assignpoints@insubsolution}%
2469    \stepcounter{assignpoints@subsolutioncount}%
2470    \gettitle[subexercise]{\theassignpoints@solutioncount.\theassignpoints@subsolutioncount}%
2471    \solutionpoints@subsolution@begin
2472    %\begin{tcolorbox}[subsolutionpoints, #1]
2473  }{%
2474    %\end{tcolorbox}%
2475    \solutionpoints@subsolution@end%
2476    \global\boolfalse{assignpoints@insubsolution}%
2477  }
2478  %- Quiz environment
2479  %-----------------
2480  \RenewDocumentEnvironment{quiz}{ }{%
2481    \catcode`\^^M=\active
2482    \@ifnextchar[%
2483    {\catcode`\^^M=5 \quiz@start}
2484    {\catcode`\^^M=5 \quiz@start[]}
2485  }{%
2486    \endVerbatimOut%
2487    %\VerbatimInput{\askreply@outfilename}%
2488    \ifaskreply@display
2489      \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
2490                        colupper=askreplysecondcolor, colback=black!15, colframe=black!50]
2491      % Empty versus given quiz title
2492      \iftoggle{assignpoints@checkemptystring}%
2493        {\strut\lightbf{\sffamily\quizname\space\currentquiznumber}%
2494            \hfill{\small\normalfont\sffamily\displaypoints*[quiz]{\currentquiznumber}}%
2495        }%
2496        {\strut\textsf{\lightbf{\normalsize\scshape\quizname\space\currentquiznumber\space}}%
2497            \textsf{\lightbf{\normalsize\scshape\enspace\textemdash\enspace\currentquiztitle}}%
2498            \hfill\textsf{\lightbf{\small\scshape%
2499              \displaypoints*[quiz]{\currentquiznumber}}}%
2500        }%
2501      \end{tcolorbox}\nopagebreak%
2502      \askreplybox%
2503        %\vspace{-.5\baselineskip}
```

```latex
2504            \tikzpagelayer{\@askreplytikzquizframebox{askreplyframedbox, fill=white, draw=black!50}}
         %
2505            \input{\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
2506            \askreplynumberoflines{% Not to count the points twice
2507              \let\pointsoriginal\points
2508              \let\points\phantom%
2509              \input{\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
2510              \let\points\pointsoriginal
2511            }%
2512            %NoL: \theaskreplycountlines
2513            %\askreplynumberoflines{\input{\askreply@outfilename}}%
2514            \par\phantomtext%
2515            \ifnumgreater{\theaskreplycountlines}{1}{}{\par\vspace{-0.6\baselineskip}}%
2516          \endtikzpagelayer
2517          %\par\vspace{\dimexpr.5\baselineskip\relax}%
2518        \endaskreplybox
2519        \vspace{\askreply@afterskip}%
2520      \fi
2521      \ifaskreply@storing
2522        \ifx\askreply@title\empty%
2523          \askreply@filecopytoenv%
2524            {\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
2525            {\quizzesdir\jobname-quiz-\askreplytwodigits{\thequiz}.env}%
2526            {\string\begin{quiz}}%
2527            {\string\end{quiz}}%
2528            {\string[storing=false]}%
2529        \else
2530          \askreply@filecopytoenv%
2531            {\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
2532            {\quizzesdir\jobname-quiz-\askreplytwodigits{\thequiz}.env}%
2533            {\string\begin{quiz}}%
2534            {\string\end{quiz}}%
2535            {\string[storing=false, title={\askreply@title}]}%
2536        \fi
2537      \fi
2538      \assignpoints@storevaluetoaux%
2539        {\assignpointsprefix{quiz}@quiztitle}%
2540        {\theassignpoints@quizcount}%
2541        {\currentquiztitle}%
2542      \assignpoints@storevaluetoaux%
2543        {\assignpointsprefix{quiz}@points}%
2544        {\theassignpoints@quizcount}%
2545        {\strip@pt\assignpoints@currentquizpoints}% https://tex.stackexchange.com/questions/2810/
2546      \askreply@storevaluetoaux{quiz@quizID}{\thequiz}{ID:\thequiz}%
2547      %\askreply@storevaluetoaux{quiz@quiztitle}{\thequiz}{\currentquiztitle}%
2548      %\togglefalse{assignpoints@checkemptystring}%
2549      \global\boolfalse{assignpoints@inquiz}%
2550      \togglefalse{assignpoints@checkemptystring}%
2551      \ifaskreply@list
2552        \addcontentsline{loq}{quiz}{\protect\numberline{\thequiz}\currentquiztitle}%
2553      \fi
2554    }
2555    \def\quiz@start[#1]{%
2556      \pgfkeys{/askreply/.cd, #1}%
2557      \ifbool{assignpoints@inquiz}%
2558        {\PackageError{assignpoints}{You cannot nest quiz environments}}%
2559        {}%
2560      \ifbool{assignpoints@quiz@layoutdefined}{}{%
```

```latex
2561        \PackageError{assignpoints}%
2562          {Option `customlayout' requires you to define a quiz layout using
2563          at least `\string\AtBeginQuiz{...}'}
2564      }%
2565      \global\booltrue{assignpoints@inquiz}%
2566      \stepcounter{quiz}%
2567      \getenvID[quiz]{\thequiz}%
2568      %\getenvID[answer]{\thequiz}%
2569      \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2570      \phantomsection\label{quiz:\thequiz}% To have correct |pageref link (see TeX.SX/49061)
2571      \setlength{\assignpoints@currentquizpoints}{0pt}%
2572      \global\assignpoints@currentquizpoints=\assignpoints@currentquizpoints%
2573      \ifx\askreply@title\@empty% WORKS!
2574        %\textbf{TRUE}
2575        \toggletrue{assignpoints@checkemptystring}%
2576      \else
2577        %\textbf{FALSE}
2578        \togglefalse{assignpoints@checkemptystring}%
2579        \renewcommand{\currentquiztitle}{\askreply@title}%
2580      \fi
2581      \stepcounter{assignpoints@quizcount}%
2582      \stepcounter{assignpoints@totalquizcount}%
2583      \ifcsname assignpoints@quiz@numberofquestions@\currentquiznumber\endcsname%
2584        \renewcommand{\numberofquestions}{%
2585          \assignpoints@readvaluefromaux{quiz}{numberofquestions@\currentquiznumber}}%
2586      \fi
2587      \ifx\askreply@envsymbol\@empty
2588        \renewcommand{\envsymbol}{\normalfont\faList}%
2589      \else
2590        \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2591      \fi
2592      \settowidth{\envsymbolwidth}{\large\envsymbol}%
2593      \def\askreply@outfilename{\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
2594      \VerbatimOut{\askreply@outfilename}%
2595    }
2596    \NewDocumentEnvironment{quiz*}{ o }{% Solely (no reference) or demonstration exercise
2597      \pgfkeys{/askreply/.cd, #1}%
2598      \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2599      \stepcounter{quizdemo}
2600      \ifx\askreply@title\@empty% WORKS!
2601        \toggletrue{assignpoints@checkemptystring}%
2602      \else
2603        \togglefalse{assignpoints@checkemptystring}%
2604        \renewcommand{\currentquiztitle}{\askreply@title}%
2605      \fi
2606      \ifx\askreply@envsymbol\@empty
2607        \renewcommand{\envsymbol}{\normalfont\faList}%
2608      \else
2609        \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2610      \fi
2611      \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2612      \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
2613                        colupper=askreplysecondcolor, colback=black!15, colframe=black!50]
2614      % Empty versus non-empty quiz title
2615      \iftoggle{assignpoints@checkemptystring}%
2616        {\strut\lightbf{\sffamily\quizname\hfill{\small\askreply@editpoints}}}%
2617        {\strut\lightbf{\sffamily\quizname\space\@Alph{\thequizdemo}%
2618          \enspace\textemdash\enspace\currentquiztitle\hfill{\small\askreply@editpoints}}}%
```

```
2619        \end{tcolorbox}\nopagebreak%
2620        \askreplybox
2621          %\vspace{-.5\baselineskip}
2622          \tikzpagelayer{\@askreplytikzquizframebox{askreplyframedbox, fill=white, draw=black!50}}
2623             \small
2624      }{%
2625             \par\phantomtext%
2626          \endtikzpagelayer
2627          \par\vspace{\dimexpr.5\baselineskip\relax}%
2628        \endaskreplybox
2629        \vspace{\askreply@afterskip}%
2630        \togglefalse{assignpoints@checkemptystring}%
2631      }
2632      %- Quizquestion environment (multiple answers)
2633      %---------------------------------------------
2634      %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
2635      %          [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t]
2636             top
2637      %          {#3} = Mandatory correct answer numbers comma separated
2637      %          {#4} = Mandatory wrong answer numbers comma separated
2638      %          {#5} = Optional title
2639      %          (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
2640      %          <#7> = Optional explanation text of the answer (usually given ;-)
2641      \RenewDocumentEnvironment{quizquestion}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
2642        {
2643          \stepcounter{quizquestion}%
2644          \label{quizquestion:\thequiz.\thequizquestion}%
2645          \ifbool{assignpoints@inquizquestion}%
2646            {\PackageError{assignpoints}{You cannot nest quizquestion environments}}%
2647            {}%
2648          \global\booltrue{assignpoints@inquizquestion}%
2649          \setlength{\assignpoints@currentquizquestionpoints}{0pt}%
2650          \global\assignpoints@currentquizquestionpoints=\assignpoints@currentquizquestionpoints%
2651          \renewcommand{\currentquizquestiontitle}{#5}%
2652          \ifstrempty{#5}%
2653            {\toggletrue{assignpoints@checkemptystring}}%
2654            {\togglefalse{assignpoints@checkemptystring}}%
2655          \stepcounter{assignpoints@quizquestioncount}%
2656          \let\mcqproposal\mcqproposalMultiple%
2657          \setcounter{mcqtrialnumber}{-1}
2658          \begin{tcolorbox}[quizquestionpoints]
2659        }
2660        {
2661          \mcqverify{#3}{#4}\hspace{0.1\linewidth}%
2662          \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
2663            {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
2664            {\ifstrequal{#1}{margin}%
2665              {\mcqdisplayanswer[#2]{#7}(#6)}% Display answer in the margin
2666              {\ifstrequal{#1}{tooltip}%
2667                {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
2668                {\PackageWarning{askreply}%
2669                  {Key `#1' is not recognised. It has been set as `tooltip'}%
2670                 \mcqdisplayanswer*[#2]{#7}(#6)% Display as tooltip
2671                }
2672              }
2673            }%
2674          \hfill\mcqreset%
2675          \end{tcolorbox}%
```

```
2676        \assignpoints@storevaluetoaux%
2677          {\assignpointsprefix{quiz}@points}%
2678          {\theassignpoints@quizcount.\theassignpoints@quizquestioncount}%
2679          {\strip@pt\assignpoints@currentquizquestionpoints}%
2680        \askreply@storevaluetoaux{quiz@quizquestiontitle}%
2681          {\thequizquestion}{\currentquizquestiontitle}%
2682        \global\boolfalse{assignpoints@inquizquestion}%
2683        \togglefalse{assignpoints@checkemptystring}%
2684      }
2685    %- Quizquestion* environment (single exclusive answer)
2686    %-------------------------------------------------------
2687    %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
2688    %          [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t]
2689    %                 top
2689    %          {#3} = Mandatory correct answer number (only one)
2690    %          {#4} = Mandatory wrong answer numbers comma separated
2691    %          {#5} = Optional title
2692    %          (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
2693    %          <#7> = Optional explanation text of the answer (usually given ;-)
2694    \NewDocumentEnvironment{quizquestion*}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
2695      {
2696        \stepcounter{quizquestion}%
2697        \label{quizquestion:\thequiz.\thequizquestion}%
2698        \ifbool{assignpoints@inquizquestion}%
2699          {\PackageError{assignpoints}{You cannot nest quizquestion environments}}%
2700          {}%
2701        \global\booltrue{assignpoints@inquizquestion}%
2702        \setlength{\assignpoints@currentquizquestionpoints}{0pt}%
2703        \global\assignpoints@currentquizquestionpoints=\assignpoints@currentquizquestionpoints%
2704        \renewcommand{\currentquizquestiontitle}{#5}%
2705        \ifstrempty{#5}%
2706          {\toggletrue{assignpoints@checkemptystring}}%
2707          {\togglefalse{assignpoints@checkemptystring}}%
2708        \stepcounter{assignpoints@quizquestioncount}%
2709        \let\mcqproposal\mcqproposalSingle%
2710        \setcounter{mcqtrialnumber}{-1}%
2711        \begin{tcolorbox}[quizquestionpoints]
2712      }
2713      {
2714        \mcqverify{#3}{#4}\hspace{0.1\linewidth}%
2715        \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
2716          {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
2717          {\ifstrequal{#1}{margin}%
2718            {\mcqdisplayanswer[#2]{#7}(#6)} % Display answer in the margin
2719            {\ifstrequal{#1}{tooltip}%
2720              {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
2721              {\PackageWarning{askreply}%
2722                {Key\space `#1'\space is\space not\space recognised.\space
2723                It\space has\space been\space set\space as\space `tooltip'}%
2724                \mcqdisplayanswer*[#2]{#7}(#6)% Display as tooltip
2725              }
2726            }
2727          }%
2728        \hfill\mcqreset%
2729        \end{tcolorbox}%
2730        \assignpoints@storevaluetoaux%
2731          {\assignpointsprefix{quiz}@points}%
2732          {\theassignpoints@quizcount.\theassignpoints@quizquestioncount}%
```

```
2733        {\strip@pt\assignpoints@currentquizquestionpoints}%
2734      \askreply@storevaluetoaux{quiz@quizquestiontitle}%
2735        {\thequizquestion}{\currentquizquestiontitle}%
2736      \global\boolfalse{assignpoints@inquizquestion}%
2737      \togglefalse{assignpoints@checkemptystring}%
2738    }
2739  %- Quizquestion environment (multiple answers)
2740  %-------------------------------------------
2741  %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
2742  %          [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t]
          top
2743  %          {#3} = Mandatory correct answer numbers comma separated
2744  %          {#4} = Mandatory wrong answer numbers comma separated
2745  %          {#5} = Optional title
2746  %          (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
2747  %          <#7> = Optional explanation text of the answer (usually given ;-)
2748  %- Quiz question demo environment (single exclusive answer)
2749  \NewDocumentEnvironment{mcqdemo}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
2750    {
2751      \stepcounter{mcqdemo}%
2752      \renewcommand{\currentquizquestiontitle}{#5}%
2753      \ifstrempty{#5}%
2754        {\toggletrue{assignpoints@checkemptystring}}%
2755        {\togglefalse{assignpoints@checkemptystring}}%
2756      \let\mcqproposal\mcqproposalMultipleDemo%
2757      \begin{tcolorbox}[mcqdemo]
2758    }
2759    {
2760      \mcqverifydemo{#3}{#4}\hspace{0.1\linewidth}%
2761      \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
2762        {\mcqdisplayanswerdemo*[#2]{#7}(#6)}% Display as tooltip
2763        {\ifstrequal{#1}{margin}%
2764          {\mcqdisplayanswerdemo[#2]{#7}(#6)} % Display answer in the margin
2765          {\ifstrequal{#1}{tooltip}%
2766            {\mcqdisplayanswerdemo*[#2]{#7}(#6)}% Display as tooltip
2767            {\PackageWarning{askreply}%
2768              {Key\space `#1'\space is\space not\space recognised.\space
2769              It\space has\space been\space set\space as\space `tooltip'}%
2770             \mcqdisplayanswerdemo*[#2]{#7}(#6)% Display as tooltip
2771            }
2772          }
2773        }%
2774      \hfill\mcqresetdemo%
2775      \end{tcolorbox}%
2776      \togglefalse{assignpoints@checkemptystring}%
2777    }
2778  %---------------------------------------------------------
2779  %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
2780  %          [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t]
          top
2781  %          {#3} = Mandatory correct answer number (only one)
2782  %          {#4} = Mandatory wrong answer numbers comma separated
2783  %          {#5} = Optional title
2784  %          (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
2785  %          <#7> = Optional explanation text of the answer (usually given ;-)
2786  \NewDocumentEnvironment{mcqdemo*}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
2787    {
2788      \stepcounter{mcqdemo}%
```

```
2789        \renewcommand{\currentquizquestiontitle}{#5}%
2790      \ifstrempty{#5}%
2791        {\toggletrue{assignpoints@checkemptystring}}%
2792        {\togglefalse{assignpoints@checkemptystring}}%
2793      \let\mcqproposal\mcqproposalSingleDemo%
2794      \begin{tcolorbox}[mcqdemo]
2795    }
2796    {
2797      \mcqverifydemo{#3}{#4}\hspace{0.1\linewidth}%
2798      \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
2799        {\mcqdisplayanswerdemo*[#2]{#7}(#6)}% Display as tooltip
2800        {\ifstrequal{#1}{margin}%
2801          {\mcqdisplayanswerdemo[#2]{#7}(#6)} % Display answer in the margin
2802          {\ifstrequal{#1}{tooltip}%
2803            {\mcqdisplayanswerdemo*[#2]{#7}(#6)}% Display as tooltip
2804            {\PackageWarning{askreply}%
2805              {Key\space `#1'\space is\space not\space recognised.\space
2806              It\space has\space been\space set\space as\space `tooltip'}%
2807              \mcqdisplayanswerdemo*[#2]{#7}(#6)% Display as tooltip
2808            }
2809          }
2810        }%
2811      \hfill\mcqresetdemo%
2812      \end{tcolorbox}%
2813      \togglefalse{assignpoints@checkemptystring}%
2814    }
2815  }{% If `assignpoints` is not loaded, defining "exercises" and "quizzes" environments
2816    %- With the following, one is able to assign points, even if they are not displayed
2817    %- It can be useful to prepare exercises and solutions in a first step
2818    \let\points\vphantom
2819    \NewDocumentCommand{\itempoints}{ s m }{%
2820      \IfBooleanTF{#1}{\vphantom{#2}}{\vphantom{#2}}
2821    }
2822    \providecommand{\currentexercisetitle}{}
2823    \providecommand{\currentsubexercisetitle}{}
2824    \providecommand{\currentquiztitle}{}
2825    \providecommand{\currentquizquestiontitle}{}
2826    %
2827    %- Exercise environment
2828    %----------------------
2829    \NewDocumentEnvironment{exercise}{  }{%
2830      \catcode`\^^M=\active
2831      \@ifnextchar[%
2832        {\catcode`\^^M=5 \exercise@start}
2833        {\catcode`\^^M=5 \exercise@start[]}
2834    }{%
2835      \endVerbatimOut%
2836      \ifaskreply@display
2837        \ifdefstring{\askreply@level}{basic}{%
2838          \toggletrue{askreply@level@display@on}%
2839          \gdef\asreply@firstlevel@color{askreplythirdcolor}%
2840          \gdef\asreply@secondlevel@color{lightgray}%
2841          \gdef\asreply@thirdlevel@color{lightgray}%
2842        }{\ifdefstring{\askreply@level}{intermediate}{%
2843            \toggletrue{askreply@level@display@on}%
2844            \gdef\asreply@firstlevel@color{lightgray}%
2845            \gdef\asreply@secondlevel@color{askreplythirdcolor}%
2846            \gdef\asreply@thirdlevel@color{lightgray}%
```

```
2847            }{\ifdefstring{\askreply@level}{advanced}{%
2848                \toggletrue{askreply@level@display@on}%
2849                \gdef\asreply@firstlevel@color{lightgray}%
2850                \gdef\asreply@secondlevel@color{lightgray}%
2851                \gdef\asreply@thirdlevel@color{askreplythirdcolor}%
2852            }{}%level=none
2853        }%
2854      }%
2855      \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip]
2856        % Empty versus non-empty exercise title
2857        \ifdefempty{\currentexercisetitle}%
2858          {\strut\lightbf{\exercisename\space\theexercise}}%
2859          {\strut\lightbf{\exercisename\space\theexercise%
2860              \enspace\textemdash\enspace\currentexercisetitle}}%
2861        }%
2862      \end{tcolorbox}\nopagebreak%
2863      \askreplybox
2864        \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{
          askreplyfirstcolor}}
2865          \input{\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}
2866          \par\phantomtext%
2867          \ifdefempty{\solutionID}%
2868            {\relax}%
2869            {\par\hfill\raisebox{-2.5pt}{%
2870                \textcolor{askreplysecondcolor}{%
2871                  \itshape\footnotesize{\normalfont\faSquare}%
2872                    \enspace Solution\space page~\pageref{solution:\solutionID}%
2873            }}%
2874          }%
2875        \endtikzpagelayer
2876        \par\vspace{\dimexpr.5\baselineskip\relax}%
2877      \endaskreplybox
2878      \vspace{\askreply@afterskip}%
2879    \fi
2880    \ifaskreply@storing
2881      \ifx\askreply@title\empty%
2882        \askreply@filecopytoenv%
2883          {\askreply@outfilename}
2884          {\exercisesdir\jobname-exercise-\askreplytwodigits{\theexercise}.env}%
2885          {\string\begin{exercise}}%
2886          {\string\end{exercise}}%
2887          {\string[storing=false]}%
2888      \else
2889        \askreply@filecopytoenv%
2890          {\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2891          {\exercisesdir\jobname-exercise-\askreplytwodigits{\theexercise}.env}%
2892          {\string\begin{exercise}}%
2893          {\string\end{exercise}}%
2894          {\string[storing=false, title=\askreply@title]}%
2895      \fi
2896    \fi
2897    \askreply@storevaluetoaux{exercise@exerciseID}{\theexercise}{ID:\theexercise}%
2898    \askreply@storevaluetoaux{exercise@exercisetitle}{\theexercise}{\currentexercisetitle}%
2899    \ifaskreply@list
2900      \addcontentsline{loe}{exercise}{\protect\numberline{\theexercise}\currentexercisetitle}%
2901    \fi
2902    \togglefalse{askreply@level@display@on}%
2903  }
```

```
2904    \def\exercise@start[#1]{%
2905        \pgfkeys{/askreply/.cd, #1}%
2906        \stepcounter{exercise}%
2907        \getenvID[exercise]{\theexercise}%
2908        \getenvID[solution]{\theexercise}%
2909        \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2910        \phantomsection\label{exercise:\theexercise}% To have correct \pageref link (see TeX.SX
            /49061)
2911        \ifx\askreply@title\@empty% WORKS!
2912        \else
2913            \renewcommand{\currentexercisetitle}{\askreply@title}%
2914        \fi
2915        \renewcommand{\envsymbol}{%
2916            \normalfont\faIcon{laptop-code}}% \faIcon{feather-alt}} \faPenFancy \faMarker
2917        \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2918        \def\askreply@outfilename{%
2919            \exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2920        \VerbatimOut{\askreply@outfilename}%
2921    }
2922    %- Subexercise environment
2923    %------------------------
2924    \NewDocumentEnvironment{subexercise}{ G{} }
2925        {\stepcounter{subexercise}%
2926         \renewcommand{\currentsubexercisetitle}{#1}
2927         \begin{tcolorbox}[subexercisenopoint]
2928     }{\end{tcolorbox}%
2929        \askreply@storevaluetoaux{exercise@subexercisetitle}%
2930            {\theexercise.\thesubexercise}{\currentsubexercisetitle}%
2931    }
2932    %
2933    %- Solution environment
2934    %---------------------
2935    \NewDocumentEnvironment{solution}{   }{%
2936        \catcode`\^^M=\active
2937        \@ifnextchar[%
2938            {\catcode`\^^M=5 \solution@start}
2939            {\catcode`\^^M=5 \solution@start[]}
2940    }{%
2941        \endVerbatimOut%
2942        \ifaskreply@display
2943            \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
2944                        colback=askreplysecondcolor!75!black, colframe=askreplysecondcolor]
2945            % Empty versus non-empty solution title
2946            \ifstrempty{\currentexercisetitle}%
2947                {\strut\lightbf{\solutionname\space\theassignpoints@solutioncount\space%
2948                    \hfill{\small%
2949                    (\exercisenamenocap\space\hyperlink{\exerciseID}{\thesolution},\space%
2950                    page\space\pageref{exercise:\thesolution})}}%
2951                }%
2952                {\strut\lightbf{\solutionname\space\thesolution\space%
2953                    \enspace\textemdash\enspace\currentexercisetitle\space%
2954                    \enspace{\small(page\space\pageref{exercise:\thesolution})}}}%
2955                }%
2956            \end{tcolorbox}\nopagebreak
2957            \askreplybox
2958                \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{
            askreplyfirstcolor}}
2959                \input{\askreply@outfilename}
```

```latex
               \par\phantomtext%
               \vspace*{.5\askreplyboxvskip}%
            \endtikzpagelayer
            \par\vspace{\dimexpr.5\baselineskip\relax}%
         \endaskreplybox
         \vspace{\askreply@afterskip}%
      \fi
      \ifaskreply@storing
         \askreply@filecopytoenv%
            {\exercisesdir\jobname-solution-body-\askreplytwodigits{\thesolution}.ltx}%
            {\exercisesdir\jobname-solution-\askreplytwodigits{\thesolution}.env}%
            {\string\begin{solution}}%
            {\string\end{solution}}%
            {\string[storing=false]}%
      \fi
      \askreply@storevaluetoaux{exercise@solutionID}{\thesolution}{ID:\thesolution}%
   }
   \def\solution@start[#1]{%
      \pgfkeys{/askreply/.cd, #1}%
      \ifx\askreply@ID\empty%
         \stepcounter{solution}%
         \getenvID[solution]{\thesolution}%
      \else
         \setcounter{solution}{\askreply@ID}%
         \getenvID[solution]{\thesolution}%
      \fi
      \stepcounter{solutionnumber}%
      \hypersetup{unicode, pdfborder=0 0 0, linkcolor=white}%
      \phantomsection\label{solution:\solutionID}%
      \renewcommand{\envsymbol}{\faLightbulb}%
      \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
      \getenvtitle[exercise]{\thesolution}%
      \def\askreply@outfilename{%
         \exercisesdir\jobname-solution-body-\askreplytwodigits{\thesolution}.ltx}%
      \VerbatimOut{\askreply@outfilename}%
   }
   %- Subsolution environment
   %------------------------
   \NewDocumentEnvironment{subsolution}{ O{} }
      {\stepcounter{subsolution}%
       \getenvtitle[subexercise]{\thesolution.\thesubsolution}%
       \begin{tcolorbox}[subsolutionnopoint]
    }{\end{tcolorbox}}
   %- Quiz environment
   %------------------
   \NewDocumentEnvironment{quiz}{ }{%
      \catcode`\^^M=\active
      \@ifnextchar[%
      {\catcode`\^^M=5 \quiz@start}
      {\catcode`\^^M=5 \quiz@start[]}
   }{%
      \endVerbatimOut%
      \ifaskreply@display
        \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
                          colupper=askreplysecondcolor, colback=black!15, colframe=black!50]
           % Empty versus non-empty exercise title
           \ifdefempty{\currentquiztitle}%
              {\strut\lightbf{\quizname\space\thequiz}}%
```

```
3018            {\strut\lightbf{\quizname\space\thequiz%
3019                \enspace\textemdash\enspace\currentquiztitle}%
3020            }%
3021        \end{tcolorbox}\nopagebreak%
3022        \askreplybox
3023            %|vspace{-.5|baselineskip}
3024            \tikzpagelayer{\@askreplytikzquizframebox{askreplyframedbox, fill=white, draw=black!50}}
3025                \input{\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}
3026                \par\phantomtext%
3027                %|vspace{-.5|baselineskip}%
3028            \endtikzpagelayer
3029            \par\vspace{\dimexpr.5\baselineskip\relax}%
3030        \endaskreplybox
3031        \vspace{\askreply@afterskip}%
3032    \fi
3033    \ifaskreply@storing
3034        \ifx\askreply@title\empty%
3035            \askreply@filecopytoenv%
3036                {\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
3037                {\quizzesdir\jobname-quiz-\askreplytwodigits{\thequiz}.env}%
3038                {\string\begin{quiz}}%
3039                {\string\end{quiz}}%
3040                {\string[storing=false]}%
3041        \else
3042            \askreply@filecopytoenv%
3043                {\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
3044                {\quizzesdir\jobname-quiz-\askreplytwodigits{\thequiz}.env}%
3045                {\string\begin{quiz}}%
3046                {\string\end{quiz}}%
3047                {\string[storing=false, title={\askreply@title}]}%
3048        \fi
3049    \fi
3050    \askreply@storevaluetoaux{quiz@quizID}{\thequiz}{ID:\thequiz}%
3051    \askreply@storevaluetoaux{quiz@quiztitle}{\thequiz}{\currentquiztitle}%
3052    \ifaskreply@list
3053        \addcontentsline{loq}{quiz}{\protect\numberline{\thequiz}\currentquiztitle}%
3054    \fi
3055 }
3056 \def\quiz@start[#1]{%
3057    \pgfkeys{/askreply/.cd, #1}%
3058    \stepcounter{quiz}%
3059    \getenvID[quiz]{\thequiz}%
3060    \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
3061    \phantomsection\label{quiz:\thequiz}% To have correct |pageref link (see TeX.SX/49061)
3062    \ifx\askreply@title\@empty% WORKS!
3063    \else
3064        \renewcommand{\currentquiztitle}{\askreply@title}%
3065    \fi
3066    \renewcommand{\envsymbol}{\normalfont\faList}%
3067    \settowidth{\envsymbolwidth}{\large\envsymbol}%
3068    \def\askreply@outfilename{\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
3069    \VerbatimOut{\askreply@outfilename}%
3070 }
3071 %- Quizquestion environment (multiple answers)
3072 %-------------------------------------------
3073 %- Usage – <#1> = Optional way to display the answer, in the margin (default) or as tooltip
3074 %          [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t]
        top
```

```latex
3075  %           {#3} = Mandatory correct answer numbers comma separated
3076  %           {#4} = Mandatory wrong answer numbers comma separated
3077  %           {#5} = Optional title
3078  %           (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
3079  %           <#7> = Optional explanation text of the answer (usually given ;-)
3080  \NewDocumentEnvironment{quizquestion}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
3081    {
3082      \stepcounter{quizquestion}%
3083      \label{quizquestion:\thequiz.\thequizquestion}%
3084      \renewcommand{\currentquizquestiontitle}{#5}%
3085      \let\mcqproposal\mcqproposalMultiple%
3086      \begin{tcolorbox}[quizquestionnopoint]
3087    }
3088    {
3089      \mcqverify{#3}{#4}\hspace{0.1\linewidth}%
3090      \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
3091        {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
3092        {\ifstrequal{#1}{margin}%
3093          {\mcqdisplayanswer[#2]{#7}(#6)}% Display answer in the margin
3094          {\ifstrequal{#1}{tooltip}%
3095            {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
3096            {\PackageWarning{askreply}%
3097              {Key\space `#1'\space is\space not\space recognised.\space
3098              It\space has\space been\space set\space as\space `tooltip'}%
3099             \mcqdisplayanswer*[#2]{#7}(#6)% Display as tooltip
3100            }
3101          }
3102        }%
3103      \hfill\mcqreset%
3104      \end{tcolorbox}%
3105      \askreply@storevaluetoaux{quiz@quizquestiontitle}%
3106        {\thequizquestion}{\currentquizquestiontitle}%
3107    }
3108  %- Quizquestion* environment (single exclusive answer)
3109  %----------------------------------------------------
3110  %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
3111  %           [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t]
3112  %           {#3} = Mandatory correct answer number (only one)
3113  %           {#4} = Mandatory wrong answer numbers comma separated
3114  %           {#5} = Optional title
3115  %           (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
3116  %           <#7> = Optional explanation text of the answer (usually given ;-)
3117  \NewDocumentEnvironment{quizquestion*}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
3118    {
3119      \stepcounter{quizquestion}%
3120      \label{quizquestion:\thequiz.\thequizquestion}%
3121      \renewcommand{\currentquizquestiontitle}{#5}%
3122      \let\mcqproposal\mcqproposalSingle%
3123      \begin{tcolorbox}[quizquestionnopoint]
3124    }
3125    {
3126      \mcqverify{#3}{#4}\hspace{0.1\linewidth}%
3127      \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
3128        {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
3129        {\ifstrequal{#1}{margin}%
3130          {\mcqdisplayanswer[#2]{#7}(#6)} % Display answer in the margin
3131          {\ifstrequal{#1}{tooltip}%
```

```
3132              {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
3133              {\PackageWarning{askreply}%
3134                {Key\space `#1'\space is\space not\space recognised.\space
3135                It\space has\space been\space set\space as\space `tooltip'}%
3136              \mcqdisplayanswer*[#2]{#7}(#6)% Display as tooltip
3137            }
3138          }
3139        }%
3140      \hfill\mcqreset%
```

Index