Extension de style TeXjazz-askreply

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RÉSUMÉ

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

Sommaire

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1   Introduction et usage élémentaire

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

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

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

1.1   Chargement de l'extension

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

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

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

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

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

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

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

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

3

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 voyant 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)

5

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*⟩}

\numberofquizzes

\quiztotalpoints

\quiztotalpoints*

\getpoints[quiz]{⟨*qz-nb*⟩}

\getpoints*[quiz]{⟨*qz-nb*⟩}

— **\numberofexercises** donne le nombre d'exercices dans tout le document ;
— **\exercisetotalpoints** et **\exercisetotalpoints*** apportent directement la somme de tous les points sur l'ensemble des exercices ;
— **\getpoints**{⟨*i*⟩} et **\getpoints***{⟨*i*⟩} ou **\getpoints<*>[exercise]**{⟨*i*⟩} conduisent au total des points du « $i^{\text{ième}}$ » exercice numéroté.
— **\numberofquizzes** retourne le nombre de questionnaires du document ;
— **\quiztotalpoints** et **\quiztotalpoints*** récupèrent la somme des points sur l'ensemble des questionnaires du document ;
— à l'instar des exercices, **\getpoints[quiz]**{⟨*i*⟩} et **\getpoints*[quiz]**{⟨*i*⟩} fournissent le total des points du « $i^{\text{ième}}$ » questionnaire.

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

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

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

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

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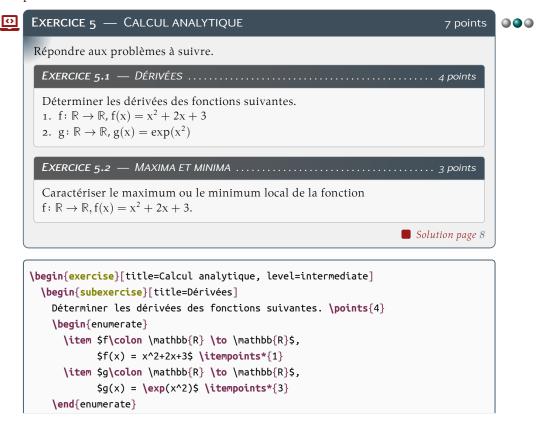
3 Ajustements et options

3.1 Structuration des exercices

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

```latex
  \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.

```latex
\begin{solution}[ID=5]
  \begin{subsolution}
    Les résultats attendus sont à suivre.
    \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 $f \colon \mathbb{R} \to \mathbb{R}, f(x) = x^2 + 2x + 3 \Rightarrow f'(x) = 2x + 2$

2. pour $g\colon \mathbb{R} \to \mathbb{R}$, $g(x) = \exp(x^2) \Rightarrow g'(x) = 2x \cdot \exp(x^2)$

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'interface utilisateur.

quizquestion
quizquestion*
\mcqproposal

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

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

\begin{quizquestion}$<\langle displ.\rangle>[\langle pos.\rangle]\{\langle correct\rangle\}\{\langle wrong\rangle\}\{\langle opt.\ title\rangle\}(\langle dimx,dimy\rangle)<\langle expl.\rangle>$
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.

9

wrong answers = {⟨*comma separated list of proposal numbers*⟩}

   Numéros des propositions fausses (obligatoires), séparées par des virgules.

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

   Titre optionnel.

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

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

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

   Texte optionnel mais souhaitable d'explication.

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

```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 réponses, 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.

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

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

— **\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 fichier, ceux intitulés <jobname>-<environment>-body-<no>.ltx et ceux nommés <jobname>-<environment>-body-<no>.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 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

2021/01/12 — 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 to be a companion package to the '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 envi-
ronments (`.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 argu-
ments are considered as verbatim inputs and LaTeX clashes. The exercise envi-
ronment 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 one, even with the 'enforce breakable' option, one must find a different strategy. The subenvironments like subexercise, subsolution or quizquestion have to be breakable too. Thus the simplest way to achieve this goal is to consider the fisrt level boxes (exercise, solution and quiz) as a background for the other 'tcolorbox' boxes. This can be done by mean of PGF/TikZ drawing tool and the 'zref' extended system cross-referencing tool (in particular the `zref-abspos` module/package which gives the absolute coordinates on the page). To solve the issue, the `tikzpagenodes` package is also of practical use.

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

links below):

▸ https://tex.stackexchange.com/questions/377161/[...]
    [...]the-current-state-of-the-art-tikz-underliner/

▸ https://tex.stackexchange.com/questions/334528/[...]
    [...]how-to-neatly-correctly-underline-with-a-tikz-rectangle

▸ https://tex.stackexchange.com/questions/335232/stacking-lengths-and-pop-them-off

6.4   OCG/OCMG

6.5   Custom tooltips (margin/foreground)

6.6   Known bugs

If there is a page break inside the **`quizquestion`** environment, the reset button and function only reset the second page proposals.

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 and explain the using of main commands which is the aim of this documentation. 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    [2021/01/12 v0.1f - Managing exercises/quizzes and their solutions/answers]
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
```

```latex
 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
130  %------------------------------------------------------------------------------------
131
132  %- From: https://tex.stackexchange.com/questions/16790/[...]
133  %-         [...]write18-capturing-shell-script-output-as-command-variable/
134  \ExplSyntaxOn
135  \NewDocumentCommand{\captureshell}{ s o m }
136   {
137    \askreply_captureshell:Ne \l__askreply_captureshell_out_tl { #3 }
138    \IfBooleanT { #1 }
139     {% we may need to stringify the result
140      \tl_set:Nx \l__askreply_captureshell_out_tl
141       { \tl_to_str:N \l__askreply_captureshell_out_tl }
142     }
143    \IfNoValueTF { #2 }
144     {
145      \tl_use:N \l__askreply_captureshell_out_tl
146     }
147     {
148      \tl_set_eq:NN #2 \l__askreply_captureshell_out_tl
149     }
150   }
151  \tl_new:N \l__askreply_captureshell_out_tl
```

```latex
152  \cs_new_protected:Nn \askreply_captureshell:Nn
153   {
154    \sys_get_shell:nnN { #2 } { } #1
155    \tl_trim_spaces:N #1 % remove leading and trailing spaces
156   }
157  \cs_generate_variant:Nn \askreply_captureshell:Nn { Ne }
158  \ExplSyntaxOff
159
160  \iflinux
161    \typeout{*** The Operating System is a \linuxname\space box ***}
162    \captureshell*[\dirstatus]{[ -d ./Exercises-\jobname/ ] && echo 'Existing' || echo 'Missing'}
163    \ifdefstring{\dirstatus}{Existing}%
164      {\typeout{*** \string`\jobname.tex' *** Directory `Exercises-\jobname' already exists.}}%
165      {\ShellEscape{mkdir Exercises-\jobname}
166        \typeout{*** \string`\jobname.tex' *** Directory `Exercises-\jobname' has been created.}}
167    \captureshell*[\dirstatus]{[ -d ./Quizzes-\jobname/ ] && echo 'Existing' || echo 'Missing'}
168    \ifdefstring{\dirstatus}{Existing}%
169      {\typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' already exists.}}%
170      {\ShellEscape{mkdir Quizzes-\jobname}
171        \typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' has been created.}}
172    %\captureshell*[\dirstatus]{[ -d ./Solutions-\jobname/ ] && echo 'Existing' || echo 'Missing'}
173    %\ifdefstring{\dirstatus}{Existing}%
174    %  {\message{*** \string`\jobname.tex' *** Directory `Solutions' already exists.}}%
175    %  {\ShellEscape{mkdir Solutions-\jobname}}
176  \fi
177  \ifmacosx
178    \typeout{*** The Operating System is a \macosxname\space box ***}
179    \captureshell*[\dirstatus]{[ -d ./Exercises-\jobname/ ] && echo 'Existing' || echo 'Missing'}
180    \ifdefstring{\dirstatus}{Existing}%
181      {\typeout{*** \string`\jobname.tex' *** Directory `Exercises-\jobname' already exists.}}%
182      {\ShellEscape{mkdir Exercises-\jobname}
183        \typeout{*** \string`\jobname.tex' *** Directory `Exercises-\jobname' has been created.}}
184    \captureshell*[\dirstatus]{[ -d ./Quizzes-\jobname/ ] && echo 'Existing' || echo 'Missing'}
185    \ifdefstring{\dirstatus}{Existing}%
186      {\typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' already exists.}}%
187      {\ShellEscape{mkdir Quizzes-\jobname}
188        \typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' has been created.}}
189  \fi
190  \ifwindows
191    \message{*** The Operating System is \windowsname\space ***}
192    % To be continued... But how? We don't know Windows commands. Is the following correct?
193    \captureshell*[\dirstatus]{IF exist Exercises-\jobname (echo Existing) ELSE (echo Missing)}
194    \ifdefstring{\dirstatus}{Existing}%
195      {\typeout{*** \string`\jobname.tex' *** Directory `Exercises-\jobname' already exists.}}%
196      {\ShellEscape{mkdir Exercises-\jobname}
197        \typeout{*** \string`\jobname.tex' *** Directory `Exercises-\jobname' has been created.}}
198    \captureshell*[\dirstatus]{IF exist Quizzes-\jobname (echo Existing) ELSE (echo Missing)}
199    \ifdefstring{\dirstatus}{Existing}%
200      {\typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' already exists.}}%
201      {\ShellEscape{mkdir Exercises-\jobname}
202        \typeout{*** \string`\jobname.tex' *** Directory `Quizzes-\jobname' has been created.}}
203  \fi
204
205  \newcommand{\exercisesdir}{Exercises-\jobname/}
206  \newcommand{\quizzesdir}{Quizzes-\jobname/}
207
208  %-- Setting lengths, colors, commands and macros
209  %---------------------------------------------
```

```latex
210
211  %- If \lightbf is defined OK (e.g. medium bold or regular if light font), else \textbf{}
212  \ifcsdef{lightbf}{\relax}{\let\lightbf\textbf}
213
214  %- Colors definitions
215  \definecolor{askreplycolorenvbackground}{gray}{0.95}
216  \definecolor{askreplydarkelectricblue}{RGB}{83, 104, 120}% HTML: #536878 - CMYK: 31, 13, 0, 53
217  \definecolor{askreplyredbrown}{RGB}{153, 25, 25}% #991919ff
218  \definecolor{askreplyteal}{RGB}{0, 128, 128}% medium-satured blue-green
219  \definecolor{askreplybuttongray}{RGB}{200, 200, 200}
220  \colorlet{askreplyfirstcolor}{askreplydarkelectricblue}
221  \colorlet{askreplysecondcolor}{askreplyredbrown}
222  \colorlet{askreplythirdcolor}{askreplyteal}
223
224  %- Boxes standard lengths
225  \newlength{\askreplyboxmargins}
226  \setlength{\askreplyboxmargins}{8pt}%24pt
227  \newlength{\askreplyboxvsep}
228  \setlength{\askreplyboxvsep}{6pt}
229  \newlength{\askreplyboxvskip}
230  \setlength{\askreplyboxvskip}{4pt}
231  \newlength{\askreplyboxrule}
232  \setlength{\askreplyboxrule}{0.6pt}
233  \newlength{\askreplyboxarc}
234  \setlength{\askreplyboxarc}{4pt}
235  \newlength{\askreplyshadingradius}
236  \setlength{\askreplyshadingradius}{1.8\baselineskip}
237
238  \newlength{\askreplyparindent}% Because sometimes using \parindent is not effective: WHY?
239  %\setlength{\askreplyparindent}{\parindent}
240  \setlength{\askreplyparindent}{0pt}
241
242  %\newcommand{\tcbphantom}{\vspace*{\dimexpr-\baselineskip-\dp\strutbox\relax}\vphantom{Hg}}
243  \newcommand{\tcbphantom}{\vspace*{-\dp\strutbox}\vphantom{Hg}}
244
245  %- Configuring itemize and enumerate lists (vertical and horizontal skips)
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...)
```

```latex
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}
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
```
21

```
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}%
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
```

```latex
     }%
     }%
     {\let\askreply@filecontent\empty}%
   \immediate\openout\askreply@out=#2\relax
   % \newlinechar`^^J seems to be LaTeX native end of line
   % (and ^^M the one of external files? TODO: clarify this!)
   \ifstrempty{#5}%
     {\immediate\write\askreply@out{#3^^J\detokenize\expandafter{\askreply@filecontent}#4}}%
     {\immediate\write\askreply@out{#3#5^^J\detokenize\expandafter{\askreply@filecontent}#4}}%
   \immediate\closeout\askreply@out
   \endgroup
}

%-- Defining styles for TikZ and `tcolorbox` boxes
%------------------------------------------------

%- Defining styles for the "first layer" box (TikZ)
\tikzset{%
  askreplyframedbox/.style={%
    on background layer,
    draw=askreplyfirstcolor,
    line width=\askreplyboxrule,
    fill=askreplycolorenvbackground,
    rounded corners=\askreplyboxarc,
  },%
  askreplyframedtitlebox/.style={%
    on background layer,
    fill=askreplyfirstcolor!75!black,
    rounded corners=\askreplyboxarc,
  },
}

\tcbset{askreplybackstageboxtitle/.style={%
  enhanced,
  notitle,
  colback=askreplyfirstcolor!75!black,
  colframe=askreplyfirstcolor,
  colupper=white,
  fontupper=\normalsize\scshape,
  arc=\askreplyboxarc,
  boxsep=2pt, boxrule=0.4pt,
  left=4pt, right=4pt, top=1.75pt, bottom=1.75pt,
  sharp corners=south,
  overlay={%
    %\node[xshift=(-0.5\envsymbolwidth-4pt)]
    %  at (frame.west) {\textcolor{askreplysecondcolor}{\normalfont\large\envsymbol}};
    \node[xshift=-10pt] at (frame.west) {% 10pt = 0.5*16pt + 2pt
      \textcolor{askreplysecondcolor}{\makebox[16pt][c]{\normalfont\large\envsymbol}}};
    \askreply@level@display% Defined below just before the environments definition
    },
  before={\par\pagebreak[0]\parindent=0pt},%\parindent=0pt
  after={\par\vspace*{-2\askreplyboxrule}},
  }
}

%- Defining styles for the "second layer" (breakabke) boxes: with and without points assignment
\tcbset{subexercisepoints/.style={%
  enhanced,
```

23

```latex
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\textit{\textsc{\lightbf{\sffamily%
456            \exercisename~\currentexercisenumber.\currentsubexercisenumber}}}}%
457          {\strut\textit{\textsc{\lightbf{\sffamily%
458            \exercisename~\currentexercisenumber.\currentsubexercisenumber}}}%
459            \ifbool{askreply@usefrenchlanguage}%
460              {\enspace\textemdash\enspace\textsc{\textit{\sffamily\currentsubexercisetitle}}}%
461              {\enspace\textendash\enspace\textsc{\textit{\sffamily\currentsubexercisetitle}}}%
462          }%
463        ~\dotfill~{\footnotesize\textit{\sffamily%
464            \displaypoints*[exercise]{\currentexercisenumber.\currentsubexercisenumber}}}%
465      },
466    before={\par\pagebreak[0]\vspace{4pt}},% No indent because title box
467    after=\par\vspace{2pt},
468    }
469 }
470
471 \tcbset{subsolutionpoints/.style={%
472    enhanced,
473    breakable,
474    colback=black!3, colframe=black!30,
475    coltitle=white, %fonttitle=\itshape\scshape,
476    title style={left color=black!65, right color=askreplysecondcolor!75!black,
477                middle color=askreplysecondcolor!30!black!75},
478    toptitle=1.0pt, bottomtitle=1.0pt,
479    fontupper=\normalfont,
480    arc=0.5\askreplyboxarc,
481    boxsep=2pt, boxrule=0.4pt,
482    left=4pt, right=4pt, top=4pt, bottom=4pt,
483    title={% Empty versus non-empty subexercise title
484      \iftoggle{assignpoints@checkemptystring}%
485        {\strut\textit{\textsc{\lightbf{\sffamily%
486          \solutionname~\theassignpoints@solutioncount.\theassignpoints@subsolutioncount}}}}%
487        {\strut\textit{\textsc{\lightbf{\sffamily%
488          \solutionname~\theassignpoints@solutioncount.\theassignpoints@subsolutioncount}}}%
489          \ifbool{askreply@usefrenchlanguage}%
490            {\enspace\textemdash\enspace\textsc{\textit{\sffamily\currentsubexercisetitle}}}%
491            {\enspace\textendash\enspace\textsc{\textit{\sffamily\currentsubexercisetitle}}}%
492        }%
493      ~\dotfill~{\footnotesize\textit{%
494          {\sffamily\displaypoints*[exercise]{%
495              \theassignpoints@solutioncount.\theassignpoints@subsolutioncount}}}}%
496      },
497    before={\par\pagebreak[0]\vspace{4pt}},%\parindent=0pt
498    %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
499    after=\par\vspace{2pt},
```

```latex
500        }
501    }
502
503    \tcbset{subexercisenopoint/.style={%
504        enhanced,
505        breakable,
506        colback=black!3,
507        colframe=black!30,
508        coltitle=white, %fonttitle=\itshape\scshape,
509        title style={left color=black!65, right color=askreplyfirstcolor!75!black,
510                    middle color=askreplyfirstcolor!30!black!75},
511        toptitle=1.0pt, bottomtitle=1.0pt,
512        fontupper=\normalfont,
513        arc=0.5\askreplyboxarc,
514        boxsep=2pt, boxrule=0.4pt,
515        left=4pt, right=4pt, top=4pt, bottom=4pt,
516        title={% Empty versus non-empty subexercise title
517            \ifdefempty{\currentsubexercisetitle}%
518                {\strut\textit{\textsc{\lightbf{\exercisename~\theexercise.\thesubexercise}}}}%
519                {\strut\textit{%
520                    \textsc{\lightbf{\exercisename~\theexercise.\thesubexercise}%
521                        \ifbool{askreply@usefrenchlanguage}%
522                            {\enspace\textemdash\enspace\textit{\lightbf{\currentsubexercisetitle}}}%
523                            {\enspace\textendash\enspace\textit{\lightbf{\currentsubexercisetitle}}}%
524                    }%
525                }%
526            }%
527        },
528        before={\par\pagebreak[0]\vspace{4pt}},%\parindent=0pt
529        %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
530        after=\tcbphantom\par\vspace*{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
531        %after=\par,% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
532        }
533    }
534
535    \tcbset{subsolutionnopoint/.style={%
536        enhanced,
537        breakable,
538        colback=black!3, colframe=black!30,
539        %colbacktitle=black!65,
540        coltitle=white, %fonttitle=\itshape\scshape,
541        title style={left color=black!65, right color=askreplysecondcolor!75!black,
542                    middle color=askreplysecondcolor!30!black!75},
543        toptitle=1.0pt, bottomtitle=1.0pt,
544        fontupper=\normalfont,
545        arc=0.5\askreplyboxarc,
546        boxsep=2pt, boxrule=0.4pt,
547        top=4pt, bottom=4pt,
548        left=4pt, right=4pt,
549        title={% Empty versus non-empty subexercise title
550            \ifdefempty{\currentsubexercisetitle}%
551                {\strut\textit{\textsc{\lightbf{\solutionname~\thesolution.\thesubsolution}}}}%
552                {\strut\textit{%
553                    \textsc{\lightbf{\sffamily\solutionname~\thesolution.\thesubsolution}%
554                        \ifbool{askreply@usefrenchlanguage}%
555                            {\enspace\textemdash\enspace\textit{\lightbf{\currentsubexercisetitle}}}%
556                            {\enspace\textendash\enspace\textit{\lightbf{\currentsubexercisetitle}}}%
557                    }%
```

```
558            }%
559          }%
560        },
561      before={\par\pagebreak[0]\vspace{4pt}},%\parindent=0pt
562      %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
563      %after=\tcbphantom\par\vspace*{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
564      after=\par\vspace{2pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
565    }
566  }
567
568  %-- Defining quizzes specific styles
569  %----------------------------------
570
571  \tikzset{%
572    quizbutton/.style={
573      shape=rectangle, rounded corners=1pt,
574      text=black, draw=#1!90,
575      top color=#1!15!white, bottom color=#1!75,
576      inner xsep=6pt, inner ysep=2pt,
577    },
578  }
579
580  \tcbset{
581    quizquestionpoints/.style={
582      enhanced jigsaw,
583      breakable,% doc. p.377: A tcolorbox inside a tcolorbox is automatically set to be unbreakable
584      %enforce breakable,% If one really wants the inner box to be breakable, use enforce breakable
585      lowerbox=ignored,
586      colframe=black!30,
587      colback=black!2!white,
588      coltitle=askreplyfirstcolor,
589      %fonttitle={\scshape\fontsize{9pt}{10.8pt}\selectfont\titlingspacedfont},
590      fonttitle={\normalfont\itshape\scshape\strut},
591      attach title to upper={\par\vspace{2pt}},
592      toptitle=0.0pt, bottomtitle=0.0pt,
593      fontupper=\normalfont\small,
594      title={% Empty versus non-empty subexercise title
595        \iftoggle{assignpoints@checkemptystring}%
596          {\lightbf{\sffamily\quizname~\currentquiznumber.\currentquizquestionnumber}}%
597          {\lightbf{\sffamily\quizname~\currentquiznumber.\currentquizquestionnumber}%
598              \enspace\textemdash\enspace\sffamily\currentquizquestiontitle%
599            ~\dotfill~{\footnotesize\normalfont\sffamily%
600              \displaypoints*[quiz]{\currentquiznumber.\currentquizquestionnumber}}%
601          }%
602        },
603      %overlay={%
604      %  \node[xshift=.5\marginparsep, yshift=-.5\baselineskip, anchor=west] at (frame.north east)
605      %    {\footnotesize\quiztrialnumbername\themcqtrialnumber};
606      %  },
607      opacityback=0.0,
608      %opacityfill=0.4,
609      boxsep=0pt, boxrule=0.4pt,
610      arc=0.5\askreplyboxarc,
611      left=6pt, right=6pt,
612      top = 4pt, bottom = 4pt,% default=2mm
613      width=\linewidth,
614      %before skip=4pt, after skip=4pt,
615      before={\par\pagebreak[0]\vspace{0pt}},%\parindent=0pt
```

```latex
616        %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
617        %after=\tcbphantom\par\vspace*{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
618        after=\par\vspace{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
619     },
620  }
621
622  \tcbset{
623    quizquestionnopoint/.style={
624        enhanced jigsaw,
625        breakable,% doc. p.377: A tcolorbox inside a tcolorbox is automatically set to be unbreakable
626        %enforce breakable,% If one really wants the inner box to be breakable, use enforce breakable
627        lowerbox=ignored,
628        colframe=black!30,
629        colback=black!2!white,
630        coltitle=askreplyfirstcolor,
631        %fonttitle={\scshape\fontsize{9pt}{10.8pt}\selectfont\titlingspacedfont},
632        fonttitle={\normalfont\itshape\scshape\strut},
633        attach title to upper={\par\vspace{2pt}},
634        toptitle=0.0pt, bottomtitle=0.0pt,
635        fontupper=\normalfont\small,
636        title={% Empty versus non-empty quizquestion title
637          \ifdefempty{\currentquizquestiontitle}%
638            {\strut\lightbf{\quizname~\thequizquestion}}%
639            {\strut\lightbf{\quizname~\thequizquestion}%
640                \enspace\textemdash\enspace\lightbf{\currentquizquestiontitle}%
641            }%
642          },
643        opacityback=0.0,
644        %opacityfill=0.4,
645        boxsep=0pt, boxrule=0.4pt,
646        arc=0.5\askreplyboxarc,
647        left=6pt, right=6pt,
648        top = 4pt, bottom = 4pt,% default=2mm
649        width=\linewidth,
650        %before skip=4pt, after skip=4pt,
651        before={\par\pagebreak[0]\vspace{0pt}},%\parindent=0pt
652        %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
653        %after=\tcbphantom\par\vspace*{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
654        after=\par\vspace{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
655     },
656  }
657
658  \tcbset{
659    mcqdemo/.style={
660        enhanced jigsaw,
661        breakable,% doc. p.377: A tcolorbox inside a tcolorbox is automatically set to be unbreakable
662        %enforce breakable,% If one really wants the inner box to be breakable, use enforce breakable
663        lowerbox=ignored,
664        colframe=black!30,
665        colback=black!2!white,
666        coltitle=askreplyfirstcolor,
667        %fonttitle={\scshape\fontsize{9pt}{10.8pt}\selectfont\titlingspacedfont},
668        fonttitle={\normalfont\itshape\scshape\strut},
669        attach title to upper={\par\vspace{2pt}},
670        toptitle=0.0pt, bottomtitle=0.0pt,
671        fontupper=\normalfont\small,
672        title={% Empty versus non-empty quizquestion title
673          \ifdefempty{\currentquizquestiontitle}%
```

```
674            {\strut\lightbf{\quizname~\thequizdemo.\themcqdemo}}%
675            {\strut\lightbf{\quizname~\@Alph{\thequizdemo}.\themcqdemo}%
676                \enspace\textemdash\enspace\lightbf{%
677                  \currentquizquestiontitle~\dotfill}%~{\small\displaypoints*[quiz]{\thequizdemo.\themcqdemo
          }}}%
678            }%
679          },
680        opacityback=0.0,
681        %opacityfill=0.4,
682        boxsep=0pt, boxrule=0.4pt,
683        arc=0.5\askreplyboxarc,
684        left=6pt, right=6pt,
685        top = 4pt, bottom = 4pt,% default=2mm
686        width=\linewidth,
687        %before skip=4pt, after skip=4pt,
688        before={\par\pagebreak[0]\vspace{0pt}},%\parindent=0pt
689        %after upper=\tcbphantom\vspace*{\dimexpr-\baselineskip+2pt\relax},
690        %after=\tcbphantom\par\vspace*{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
691        after=\par\vspace{4pt},% WHY IT IS NOT THE SAME AS WITH POINTS? STRANGE!
692      },
693  }
694
695  %-- Setting and tweaking useful macros from the unofficial `tikzpagelayer` package (Martin Scharrer)
696  %-------------------------------------------------------------------------------------------------
697
698  %- See: https://tex.stackexchange.com/questions/377161/[...]
699  %-      [...]how-to-neatly-correctly-underline-with-a-tikz-rectangle/
700  %-    https://tex.stackexchange.com/questions/334528/the-current-state-of-the-art-tikz-underliner/
701  %- Martin Scharrer's original code: https://bitbucket.org/martin_scharrer/tikzpagelayers (dead link)
702
703  \newcommand\tikzpagemark{}
704  \DeclareRobustCommand\tikzpagemark[1]{%
705    \leavevmode
706    \zsavepos{tikzpagemarkpos-#1}%
707  }
708
709  \def\tpl@addto#1#2{%
710    \begingroup
711      \ifx#1\@undefined
712        \global\let#1\empty
713      \else
714        \ifx#1\relax
715          \global\let#1\empty
716        \fi
717      \fi
718      \edef\@tempa{\@thetikzpagemark}%
719      \expandafter\g@addto@macro\expandafter#1\expandafter{%
720        \expandafter\set@tikzpagemark\expandafter{\@tempa}%
721          #2%
722      }%
723    \endgroup
724  }
725
726  \newenvironment{tikzpagelayer}[2][foreground]{%
727    \stepcounter{tikzpagemark}%
728    \tikzpagelayeron
729    \tikzpagemark{\@thetikzpagemark-begin}%
730    \expandafter\tpl@addto\csname tikzpagelayer@#1@page%
```

28

```latex
731        \zref@extract{tikzpagemarkpos-\@thetikzpagemark-begin}{abspage}\endcsname{#2}%
732      \edef\endtikzpagelayer{\noexpand\tikzpagemark{\@thetikzpagemark-end}}%
733  }{}%
734
735  \newcommand{\starttikzpagelayer}[3][foreground]{%
736    \begingroup
737      \tikzpagelayeron
738      \edef\@thetikzpagemark{@#2}%
739      \tikzpagemark{\@thetikzpagemark-begin}%
740      \expandafter\tpl@addto\csname tikzpagelayer@#1@page%
741        \zref@extract{tikzpagemarkpos-\@thetikzpagemark-begin}{abspage}\endcsname{#3}%
742    \endgroup
743  }
744
745  \newcommand{\stoptikzpagelayer}[1]{%
746    \tikzpagemark{@#1-end}%
747  }%
748
749  \def\set@tikzpagemark#1{%
750    \def\@thetikzpagemark{#1}%
751    \edef\tplfirstpage{\zref@extract{tikzpagemarkpos-#1-begin}{abspage}}%
752    \edef\tpllastpage{\zref@extract{tikzpagemarkpos-#1-end}{abspage}}%
753    \coordinate (tplbegin) at
754      ([shift={(\zposx{tikzpagemarkpos-#1-begin}sp,
755               \zposy{tikzpagemarkpos-#1-begin}sp)}]current page.south west);%
756    \coordinate (tplend) at
757      ([shift={(\zposx{tikzpagemarkpos-#1-end}sp,
758               \zposy{tikzpagemarkpos-#1-end}sp)}]current page.south west);%
759  }
760
761  \newcommand\tplonpage[2][foreground]{%
762    \begingroup
763      \pgfmathtruncatemacro\@tplpage{#2}%
764      \expandafter\endgroup
765      \expandafter\tpl@addto\csname tikzpagelayer@#1@page\@tplpage\endcsname
766  }
767
768  \newcommand\tplonnextpage[1][foreground]{%
769    \tplonpage[#1]{\@tplnextpage}%
770  }
771
772  \newcommand\tplonlastpage[1][foreground]{%
773    \tplonpage[#1]{\tpllastpage}%
774  }
775
776  \newcommand\tplonmiddlepages[2][foreground]{%
777    \begingroup
778      \@tempcnta=\tplfirstpage\relax
779      \loop
780      \advance\@tempcnta\@ne
781      \ifnum\@tempcnta<\tpllastpage
782        \tplonpage[#1]{\number\@tempcnta}{#2}%
783      \repeat
784    \endgroup
785  }
786
787  %- During the page `abspage' is one to low
788  \def\@tplnextpage{\c@abspage+2}
```

```
789
790  %- In the shipout routine it is correct
791  \def\@@tplnextpage{\c@abspage+1}
792
793  \newcounter{tikzpagemark}
794  \def\@thetikzpagemark{\number\c@tikzpagemark}
795
796  \def\@tikzpagelayeron{%
797    \AtBeginShipoutNext{\tikzpagelayer@atbeginshipout}%
798    \global\let\tikzpagelayeron\relax
799  }
800
801  \AtBeginShipout{\tikzpagelayer@atbeginshipout}%
802  \let\tikzpagelayeron\@tikzpagelayeron
803  \let\tikzpagelayer@background\empty
804  \let\tikzpagelayer@foreground\empty
805
806  \def\tikzpagelayer@atbeginshipout{%
807    \setbox\AtBeginShipoutBox\hbox{%
808      \color@setgroup
809      \let\@tplnextpage\@@tplnextpage
810      \begin{tikzpicture}[remember picture]%
811        \path[use as bounding box,every node/.style={},every rectangle node/.style={}]
812          node[inner sep=0pt,outer sep=0pt] (current page box) {\box\AtBeginShipoutBox};
813        %\fill[line width=10pt,blue,opacity=.5]
814        %  (current page box.north west) rectangle (current page box.south east);
815        \begin{pgfonlayer}{background}
816          \begin{scope}%
817            \csname tikzpagelayer@background@page\number\c@abspage\endcsname
818              \tikzpagelayer@background
819          \end{scope}%
820        \end{pgfonlayer}%
821        \begin{scope}%
822          \csname tikzpagelayer@foreground@page\number\c@abspage\endcsname
823            \tikzpagelayer@foreground
824        \end{scope}%
825      \end{tikzpicture}%
826      \color@endgroup
827    }%
828    \global\let\tikzpagelayer@background\empty
829    \global\let\tikzpagelayer@foreground\empty
830    \global\let\tikzpagelayeron\@tikzpagelayeron
831  }
832
833  \NewDocumentCommand{\@askreplytikzframebox}{ m m }{% Background box for exercises and solutions
834    \begin{scope}[#1]
835      \ifnum\tplfirstpage=\tpllastpage
836        %\node[circle, radius=2pt, fill=yellow]
837        %  at ([xshift={(-\askreplyboxmargins-\askreplyparindent+\askreplyboxrule)},
838        %       yshift={(\ht\strutbox+1.5\askreplyboxvskip+0.5\askreplyboxrule)}]tplbegin) {};
839        \path [#1] let
840          \p1 = (tplbegin),
841          \p2 = (tplend),
842          \p3 = (current page text area.north west),
843          \p4 = (current page text area.south east) in
844            (\x4-.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) --
845            (\x4-.5\pgflinewidth,\y2-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) --
846            (\x3+.5\pgflinewidth,
```

```
847          \y2-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) [rounded corners=false] --
848          (\x3+.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) -- cycle;
849      \begin{scope}
850          %- Starting with a shading and fading quarter of a circle
851          \node[save path=\shadingstartboxpath,
852                shape=circular sector,
853                rounded corners=false,
854                outer sep=0pt,
855                circular sector angle=90,
856                shape border uses incircle,
857                shape border rotate=135,%-225,%-135,%-45,%135,%45,
858                anchor=sector center,
859                minimum size=\askreplyshadingradius,
860                xshift={(-\askreplyboxmargins-\askreplyparindent+\askreplyboxrule)},
861                yshift={(\ht\strutbox+1.5\askreplyboxvskip+0.0\askreplyboxrule)},
862                ]
863          (shadingstartbox) at (tplbegin) {};
864          \clip[use path=\shadingstartboxpath];
865          \shade[inner color=#2, outer color=askreplycolorenvbackground] let %,path fading=fade in
866              \p1=($(shadingstartbox.arc center)-(shadingstartbox.sector center)$),
867              \n1={veclen(\y1,\x1)} in
868                (shadingstartbox.sector center) circle (\n1);
869      \end{scope}
870      %\begin{scope}
871      %  %- Ending with a solution reference (for exercise only, empty for solution)
872      %  \node[anchor=east, color=askreplysecondcolor] at (tplend)
873      %    {\itshape\footnotesize{\normalfont\faSquare}\enspace Solution};
874      %\end{scope}
875      \else
876          \path [#1] let
877              \p1 = (tplbegin),
878              \p3 = (current page text area.north west),
879              \p4 = (current page text area.south east) in
880                (\x3+.5\pgflinewidth,\y4-\dp\strutbox) [rounded corners=false] --
881                (\x3+.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) -|
882                (\x4-.5\pgflinewidth,\y4-\dp\strutbox);
883      \begin{scope}
884          %- Starting with a shading and fading quarter of a circle
885          \node[save path=\shadingstartboxpath,
886                shape=circular sector,
887                rounded corners=false,
888                outer sep=0pt,
889                circular sector angle=90,
890                shape border uses incircle,
891                shape border rotate=135,%-225,%-135,%-45,%135,%45,
892                anchor=sector center,
893                minimum size=\askreplyshadingradius,
894                xshift={(-\askreplyboxmargins-\askreplyparindent+\askreplyboxrule)},
895                yshift={(\ht\strutbox+1.5\askreplyboxvskip+0.0\askreplyboxrule)},
896                ]
897          (shadingstartbox) at (tplbegin) {};
898          \clip[use path=\shadingstartboxpath];
899          \shade[inner color=#2, outer color=askreplycolorenvbackground] let %,path fading=fade in
900              \p1=($(shadingstartbox.arc center)-(shadingstartbox.sector center)$),
901              \n1={veclen(\y1,\x1)} in
902                (shadingstartbox.sector center) circle (\n1);
903      \end{scope}
904      \tplonpage{\tpllastpage}{%
```

```latex
          \begin{scope}[#1]
            \path [#1] let
              \p1 = (tplend),
              \p3 = (current page text area.north west),
              \p4 = (current page text area.south east) in
                (\x3+.5\pgflinewidth,\y3+.5\pgflinewidth) --
                (\x3+.5\pgflinewidth,\y1-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) -|
                (\x4-.5\pgflinewidth,\y3+.5\pgflinewidth);
          \end{scope}%
        }%
      \tplonmiddlepages{%
        \begin{scope}[#1]
          \path [#1,draw=none] let
            \p1 = (current page text area.north west),
            \p2 = (current page text area.south east) in
              (\x1+.5\pgflinewidth,\y1+.5\pgflinewidth) --
              (\x1+.5\pgflinewidth,\y2-.5\pgflinewidth) --
              (\x2-.5\pgflinewidth,\y2-.5\pgflinewidth) --
              (\x2-.5\pgflinewidth,\y1+.5\pgflinewidth) -- cycle;
          \path [#1] let
            \p1 = (current page text area.north west),
            \p2 = (current page text area.south east) in
              (\x1+.5\pgflinewidth,\y1+.5\pgflinewidth) --
              (\x1+.5\pgflinewidth,\y2-.5\pgflinewidth)
              (\x2-.5\pgflinewidth,\y2-.5\pgflinewidth) --
              (\x2-.5\pgflinewidth,\y1+.5\pgflinewidth);
        \end{scope}%
      }%
    \fi
  \end{scope}
}

\NewDocumentCommand{\@askreplytikzquizframebox}{ m }{% Background box for quizzes
  \begin{scope}[#1]
    \ifnum\tplfirstpage=\tpllastpage
      %\node[circle, radius=2pt, fill=yellow]
      %  at ([xshift={(-\askreplyboxmargins-\askreplyparindent+\askreplyboxrule)},
      %       yshift={(\ht\strutbox+1.5\askreplyboxvskip+0.5\askreplyboxrule)}]tplbegin) {};
      \path [#1] let
        \p1 = (tplbegin),
        \p2 = (tplend),
        \p3 = (current page text area.north west),
        \p4 = (current page text area.south east) in
          (\x4-.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) --
          (\x4-.5\pgflinewidth,\y2-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) --
          (\x3+.5\pgflinewidth,
           \y2-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) [rounded corners=false] --
          (\x3+.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) -- cycle;
    \else
      \path [#1] let
        \p1 = (tplbegin),
        \p3 = (current page text area.north west),
        \p4 = (current page text area.south east) in
          (\x3+.5\pgflinewidth,\y4-\dp\strutbox) [rounded corners=false] --
          (\x3+.5\pgflinewidth,\y1+\ht\strutbox+1.5\askreplyboxvskip+.5\pgflinewidth) -|
          (\x4-.5\pgflinewidth,\y4-\dp\strutbox);
      \tplonpage{\tpllastpage}{%
        \begin{scope}[#1]
```

```latex
                \path [#1] let
                  \p1 = (tplend),
                  \p3 = (current page text area.north west),
                  \p4 = (current page text area.south east) in
                    (\x3+.5\pgflinewidth,\y3+.5\pgflinewidth) --
                    (\x3+.5\pgflinewidth,\y1-\dp\strutbox-1.5\askreplyboxvskip-.5\pgflinewidth) -|
                    (\x4-.5\pgflinewidth,\y3+.5\pgflinewidth);
              \end{scope}%
            }%
          \tplonmiddlepages{%
            \begin{scope}[#1]
              \path [#1,draw=none] let
                \p1 = (current page text area.north west),
                \p2 = (current page text area.south east) in
                  (\x1+.5\pgflinewidth,\y1+.5\pgflinewidth) --
                  (\x1+.5\pgflinewidth,\y2-.5\pgflinewidth) --
                  (\x2-.5\pgflinewidth,\y2-.5\pgflinewidth) --
                  (\x2-.5\pgflinewidth,\y1+.5\pgflinewidth) -- cycle;
              \path [#1] let
                \p1 = (current page text area.north west),
                \p2 = (current page text area.south east) in
                  (\x1+.5\pgflinewidth,\y1+.5\pgflinewidth) --
                  (\x1+.5\pgflinewidth,\y2-.5\pgflinewidth)
                  (\x2-.5\pgflinewidth,\y2-.5\pgflinewidth) --
                  (\x2-.5\pgflinewidth,\y1+.5\pgflinewidth);
            \end{scope}%
          }%
        \fi
      \end{scope}
  }


  %-- Storing and retrieving stuff macros
  %------------------------------------

  \newcommand{\askreply@storevaluetoaux}[3]{%
    % Usage: #1 = prefix – #2 = <env-number> – #3 = <length-name>
    \immediate\write\@auxout{\string\global\string\long\string\@namedef{askreply@#1@#2}{#3}}%
  }

  \newcommand{\askreply@readvaluefromaux}[2]{%
    % Usage: #1 = prefix – #2 = <value-(number)-(text)-(length-without-pt)>
    %   e.g. \setlength{<length>}{\askreply@readvaluefromaux{\askreply@prefix{#1}}{#2}pt}
    \ifcsname askreply@#1@#2\endcsname%
      \@nameuse{askreply@#1@#2}%
    \else%
      \textbf{??}%
      \PackageWarning{askreply}%
        {Key 'askreply@#1@#2' not found in aux file. Maybe you need to recompile?}%
    \fi%
  }

  \NewDocumentCommand{\getenvtitle}{ O{exercise} m }{%
    % Usage – #1 = <env-name>, #2 = <env-number>
    \ifstrequal{#1}{exercise}% For the exercise title
      {% Storage exists
        \ifcsname askreply@exercise@exercisetitle@#2\endcsname%
          \renewcommand{\currentexercisetitle}{%
            \askreply@readvaluefromaux{exercise}{exercisetitle@#2}}%
```

```latex
1021        \else% Storage is empty or not yet available
1022          \PackageWarning{askreply}%
1023            {Storage key not found in aux file. Maybe you need to recompile?}%
1024        \fi%
1025      }{}%
1026    \ifstrequal{#1}{subexercise}% For the subexercise title
1027      {% Storage exists  assignpoints@exercise@subexercisetitle@1.1
1028        \ifcsname askreply@exercise@subexercisetitle@#2\endcsname%
1029          \renewcommand{\currentsubexercisetitle}{%
1030            \askreply@readvaluefromaux{exercise}{subexercisetitle@#2}}%
1031        \else% Storage is empty or not yet available
1032          \PackageWarning{askreply}%
1033            {Storage key not found in aux file. Maybe you need to recompile?}%
1034        \fi%
1035      }{}%
1036  }
1037
1038  \providecommand{\exerciseID}{}
1039  \providecommand{\solutionID}{}
1040  \providecommand{\quizID}{}
1041  \providecommand{\answerID}{}
1042
1043  \NewDocumentCommand{\getenvID}{ O{exercise} m }{%
1044    % Usage - #1 = <env-name>, #2 = <env-number>
1045    \ifstrequal{#1}{exercise}% For the exercise ID
1046      {% Storage exists
1047        \ifcsname askreply@exercise@exerciseID@#2\endcsname%
1048          \renewcommand{\exerciseID}{%
1049            \askreply@readvaluefromaux{exercise}{exerciseID@#2}}%
1050        \else% Storage is empty or not yet available
1051          \renewcommand{\exerciseID}{}%
1052        \fi%
1053      }{}%
1054    \ifstrequal{#1}{solution}% For the solution ID
1055      {% Storage exists
1056        \ifcsname askreply@exercise@solutionID@#2\endcsname%
1057          \renewcommand{\solutionID}{%
1058            \askreply@readvaluefromaux{exercise}{solutionID@#2}}%
1059        \else% Storage is empty or not yet available
1060          \renewcommand{\solutionID}{}%
1061        \fi%
1062      }{}%
1063  }
1064
1065  %-- Environment counters and symbols
1066  %-----------------------------------
1067
1068  %\@ifclassloaded{book}{%
1069  %\@ifundefined{chapter}{%
1070    \newcounter{exercise}%
1071    \newcounter{solution}%
1072    \newcounter{solutionnumber}%
1073    \newcounter{quiz}%
1074    \newcounter{answer}%
1075  %}{%
1076  %  \newcounter{exercise}[chapter]%
1077  %  \newcounter{solution}[chapter]%
1078  %  \newcounter{quiz}[chapter]%
```

```latex
1079  %  \newcounter{answer}[chapter]%
1080  %}%
1081
1082  \newcounter{subexercise}[exercise]
1083  \newcounter{subsolution}[solution]
1084  \newcounter{quizquestion}[quiz]
1085  \newcounter{mcqdemo}
1086  \newcounter{quizdemo}
1087  \newcounter{mcqquiztotaldemo}
1088  \newcounter{subanswer}[answer]
1089
1090  \newcounter{mcqproposal}[quizquestion]% Proposal IDs counter to choose within a quiz question
1091  \newcounter{mcqquiztotal}[quizquestion]% Total propositions counter within a quiz question
1092  \newcounter{mcqproposaldemo}[mcqdemo]% Proposal IDs counter to choose within a quiz question demo
1093
1094  \newcounter{mcqtrialnumber}[quizquestion]
1095
1096  % Exercise symbol: \faIcon{feather-alt}} \faPenFancy \faMarker \faQuestion
1097  % Solution icon: \faLightbulb \faLightbulb[regular] \faUbuntu \faInfo \faInfoCircle
1098
1099  \newcommand{\envsymbol}{}
1100  \newlength{\envsymbolheight}
1101  \newlength{\envsymbolwidth}
1102
1103  %- Setting quiz symbols: designed with the help of the Fontawesome icons packages v.4.6 and v.5.7
1104
1105  \newlength{\quizcheckboxwidth}
1106  \newlength{\quizcheckgap}
1107  \newlength{\quizsymbolwidth}
1108  \newlength{\quizanswerbuttonwidth}
1109
1110  \setlength{\quizcheckgap}{0.5em}
1111  \setlength{\quizsymbolwidth}{10pt}
1112  \setlength{\quizanswerbuttonwidth}{%
1113    \widthof{\scriptsize\lightbf{\textsc{\quizhideanswername}}}%
1114  }%
1115  \addtolength{\quizanswerbuttonwidth}{12pt}% inner 2*xsep button style
1116
1117  % \faCheck width = 10.0 pt; \faTimes width = 7.85pt => same width in a box
1118  \newcommand{\checktick}{%
1119    \makebox[\quizsymbolwidth][c]{%
1120      \textcolor{green!60!black}{\normalfont\normalsize\faCheck}%
1121    }%
1122  }
1123  \newcommand{\crosstick}{%
1124    \makebox[\quizsymbolwidth][c]{%
1125      \textcolor{red!60!black}{\normalfont\normalsize\faTimes}%
1126    }%
1127  }
1128
1129  %-- Setting displaying and recording useful commands
1130  %------------------------------------------------
1131
1132  \newcommand{\phantomtext}{\vspace*{\dimexpr-\baselineskip-\askreplyboxvskip\relax}\phantom{Hg}}
1133
1134  \begingroup%
1135    \catcode`P=12 \catcode`T=12 \lowercase{\endgroup
1136    \def\askreplysplitbefore#1{%
```

```latex
1137        \expandafter\askreply@strip@pt\expandafter\@askreplysplitbefore\the\dimexpr#1PT\relax\@nil
1138     }
1139     \def\askreplyssplitafter#1{%
1140        \expandafter\askreply@strip@pt\expandafter\@askreplysplitafter\the\dimexpr#1PT\relax\@nil
1141     }
1142     \def\@askreplysplitbefore#1.#2.#3PT\@nil{#1}
1143     \def\@askreplysplitafter#1.#2.#3PT\@nil{#2}
1144     \def\askreply@strip@pt#1#2PT#3\@nil{#1#2..PT\@nil}
1145  } % balance the open brace after \lowercase
1146
1147  \newcommand\askreplytwodigits[1]{%
1148     \ifnum#1<10 0#1\else #1\fi
1149  }
1150
1151  \newtoggle{askreply@points}
1152  \@ifpackageloaded{texjazz-assignpoints}%
1153     {\toggletrue{askreply@points}}{\togglefalse{askreply@points}}
1154
1155
1156  %-------------------------------------------------------------------------------------------------
1157  %-- Defining the different environments with options (PGFKeys and l3keys2e system)
1158  %-------------------------------------------------------------------------------------------------
1159
1160  %-- Managing key-value options of commands (PGFKeys)
1161  %-----------------------------------------------------
1162
1163  %- https://tex.stackexchange.com/questions/521011/how-is-a-pgf-key-defined/
1164  \newif\ifaskreply@display\askreply@displaytrue %or display/.default=true
1165  \newif\ifaskreply@storing\askreply@storingtrue %or storing/.default=true
1166  \newif\ifaskreply@list\askreply@listtrue %or list/.default=true
1167
1168  \pgfkeys{%
1169     /askreply/.is family, /askreply/.cd,
1170     display/.is if=askreply@display,
1171     %display/.default=true,% DOES NOT WORK! WHY?
1172     storing/.is if=askreply@storing,
1173     %storing/.default=true,% DOES NOT WORK! WHY?
1174     list/.is if=askreply@list,
1175     %list/.default=true,% DOES NOT WORK! WHY?
1176     title/.store in=\askreply@title,
1177     title=,
1178     level/.is choice,
1179     level/basic/.code=\def\askreply@level{basic},
1180     level/intermediate/.code=\def\askreply@level{intermediate},
1181     level/advanced/.code=\def\askreply@level{advanced},
1182     level/.default=\def\askreply@level{},
1183     before skip/.store in=\askreply@beforeskip,
1184     before skip=6pt,
1185     after skip/.store in=\askreply@afterskip,
1186     after skip=6pt,
1187     text color/.store in=\askreply@textcolor,
1188     text color=black,
1189     points/.store in=\askreply@editpoints,
1190     points=,
1191     symbol/.store in=\askreply@envsymbol,
1192     symbol=,
1193     ID/.store in=\askreply@ID,
1194     ID=,
```

```latex
1195    }
1196
1197    \newenvironment{askreplybox}{%
1198      %\centering%
1199      \list{}{%
1200        \leftmargin\askreplyboxmargins%
1201        \rightmargin\leftmargin%
1202        \listparindent\askreplyparindent%
1203        \itemindent\askreplyparindent%
1204        \parsep\parskip%
1205      }%
1206      \item\relax%
1207    }{\endlist}
1208
1209    %- Box height measurement
1210    \newlength{\askreply@detect@boxheight}
1211    \newtcolorbox{askreply@measurebox}[2][]{% From http://tex.stackexchange.com/questions/203194/
1212      blank,%show bounding box, parbox=false,
1213      overlay={\xdef#2{\tcb@height}},
1214      #1
1215    }
1216
1217    %- https://tex.stackexchange.com/questions/428462/[...]
1218    %-     [...]how-can-i-dynamically-set-the-box-height-to-the-max-height-of-a-group-of-boxes
1219
1220    % Backend boxmaker
1221    %\long\def\askreply@box#1#2#3{%
1222    %  \tikz\node[draw, line width=.4pt, inner sep=2pt,outer sep=0pt,align=left,minimum width=#2,minimum
1223          height=#3]
1224    %{\parbox{\dimexpr#2-4pt}{\raggedright\small#1}};}
1224
1225    % User-level boxmaker
1226    %\long\def\nodebox#1#2#3{\ABC@box{#1}{#2}{#3}\kern-.4pt}% kern used to horizontally shift boxes back by
1226          stroke width of frame
1227
1228    %\newdimen\nodeboxminHT
1229    %\nodeboxminHT=1cm\relax
1230
1231    %\NewEnviron{formrow}{%
1232    %  \leavevmode\unskip\par\sbox\@tempboxa{\BODY}\nodeboxminHT=\the\ht\@tempboxa\BODY\ignorespaces}
1233
1234
1235
1236    %-- Generic single and multiple MCQs definitions (OCG/OCMD PDF: `ocgx2` package)
1237    %--------------------------------------------------------------------------------
1238
1239    %- From: https://tex.stackexchange.com/questions/486148/[...]
1240    %-          [...]avoid-passing-an-empty-optional-argument-an-environment-with-verbatim-content
1241    %-       https://tex.stackexchange.com/questions/490706/[...]
1242    %-          [...]ocgx2-verify-and-reset-of-multiple-choice-questions-with-ocgs
1243    %-       https://tex.stackexchange.com/questions/493987/[...]
1244    %-          [...]ocgx2-xparse-expl3-splitting-comma-separated-ocmd-ocgs-lists-of-arguments-for
1245
1246    %----------------------------
1247    %-- ESSENTIAL! ONLY USE A POINT AS OCG SEPARATOR: ERROR WITH COLON AND @ --> WHY? (French spaces?)
1248    %----------------------------
1249
1250    %- Only a step for single solution MCQs: proposal button
```

```latex
1251
1252 \NewDocumentCommand{\quizSingleButton}{m}{% Based on AG's \quizButton command
1253   % Syntax – #1: id choice
1254   % Action on click: toggle myself (choice layer), hide verifcation layer
1255   \stepcounter{mcqproposal}%
1256   \stepcounter{mcqquiztotal}%
1257   \setlength{\quizcheckboxwidth}{\widthof{\faIcon[regular]{circle}}}%
1258   \makebox[\quizcheckboxwidth][c]{%
1259     %\actionsocg{#1}{}{verify:\thequizquestion}{\faIcon[regular]{circle}}%
1260     \actionsocg{#1}{}{verify.\thequiz.\thequizquestion}{\faIcon[regular]{circle}}%
1261   }%
1262   %\begin{ocg}[radiobtngrp=choice:\thequizquestion]{#1}{#1}{off}% choice layer
1263   \begin{ocg}[radiobtngrp=choice.\thequiz.\thequizquestion]{#1}{#1}{off}% choice layer
1264     %\makebox[\widthof{\faCircleThin}]{\textcolor{green!60!black}{\faCheck}}%
1265     %\makebox[\quizcheckboxwidth]{\textcolor{green!60!black}{\faIcon[solid]{dot-circle}}}%
1266     \hspace*{-\quizcheckboxwidth}%
1267     \makebox[\widthof{\faIcon[regular]{circle}}][c]{\textcolor{green!60!black}{\faDotCircle}}%
1268     \hspace*{-\quizcheckboxwidth}%
1269     \makebox[\quizcheckboxwidth][c]{\textcolor{askreplyfirstcolor}{\faIcon[regular]{circle}}}%
1270   \end{ocg}%
1271 }
1272
1273 \NewDocumentCommand{\quizSingleButtonDemo}{m}{% Based on AG's \quizButton command
1274   % Syntax – #1: id choice
1275   % Action on click: toggle myself (choice layer), hide verifcation layer
1276   \stepcounter{mcqproposaldemo}%
1277   \stepcounter{mcqquiztotaldemo}%
1278   \setlength{\quizcheckboxwidth}{\widthof{\faIcon[regular]{circle}}}%
1279   \makebox[\quizcheckboxwidth][c]{%
1280     %\actionsocg{#1}{}{verify:\thequizquestion}{\faIcon[regular]{circle}}%
1281     \actionsocg{#1}{}{verify.\thequizdemo.\themcqdemo}{\faIcon[regular]{circle}}%
1282   }%
1283   \begin{ocg}[radiobtngrp=choice.\thequizdemo.\themcqdemo]{#1}{#1}{off}% choice layer
1284     \hspace*{-\quizcheckboxwidth}%
1285     \makebox[\widthof{\faIcon[regular]{circle}}][c]{\textcolor{green!60!black}{\faDotCircle}}%
1286     \hspace*{-\quizcheckboxwidth}%
1287     \makebox[\quizcheckboxwidth][c]{\textcolor{askreplyfirstcolor}{\faIcon[regular]{circle}}}%
1288   \end{ocg}%
1289 }
1290
1291 %- Defining a proposition for single solution MCQ
1292
1293 \NewDocumentCommand{\mcqproposalSingle}{o m}{%
1294   % Syntax – #1 = more tcbox options
1295   %          #2 = statement proposal
1296   \begin{tcolorbox}[%
1297     breakable, enhanced,
1298     notitle, colframe=black!60, colback=white,
1299     boxrule=0.2pt, arc=0.4pt, boxsep = 0pt,
1300     left = 4pt, right = 4pt,
1301     top = 4pt, bottom = 4pt,
1302     before skip=4pt, after skip=4pt,
1303     IfValueTF={#1}{#1}{},% More options
1304   ]
1305   \parbox[t]{16pt}{%
1306     \hspace*{2pt}%
1307     %\quizSingleButton{mcqproposalref:\thequizquestion:\themcqproposal}
1308     \quizSingleButton{mcqproposalref.\thequiz.\thequizquestion.\themcqproposal}
```

```
1309          }%
1310          \parbox[t]{\linewidth-16pt}{#2}%
1311        \end{tcolorbox}%
1312    }
1313
1314    \NewDocumentCommand{\mcqproposalSingleDemo}{o m}{%
1315        % Syntax - #1 = more tcbox options
1316        %          #2 = statement proposal
1317        \begin{tcolorbox}[%
1318          breakable, enhanced,
1319          notitle, colframe=black!60, colback=white,
1320          boxrule=0.2pt, arc=0.4pt, boxsep = 0pt,
1321          left = 4pt, right = 4pt,
1322          top = 4pt, bottom = 4pt,
1323          before skip=4pt, after skip=4pt,
1324          IfValueTF={#1}{#1}{},% More options
1325          ]
1326          \parbox[t]{16pt}{%
1327            \hspace*{2pt}%
1328            \quizSingleButtonDemo{mcqproposalref.\thequizdemo.\themcqdemo.\themcqproposaldemo}
1329          }%
1330          \parbox[t]{\linewidth-16pt}{#2}%
1331        \end{tcolorbox}%
1332    }
1333
1334    %- Only a step for multiple solution MCQs (based on AG's \quizButton command)
1335
1336    \NewDocumentCommand{\quizMultipleButton}{m}{%
1337        % Syntax - #1: choice id for answering proposal
1338        % Action on click: toggle myself (choice layer), hide verifcation layer
1339        \stepcounter{mcqproposal}%
1340        \stepcounter{mcqquiztotal}%
1341        \setlength{\quizcheckboxwidth}{\widthof{\faIcon[regular]{square}}}%
1342        \makebox[\quizcheckboxwidth][c]{%
1343          %\actionsocg{#1}{}{verify:\thequizquestion}{\faIcon[regular]{square}}%
1344          \actionsocg{#1}{}{verify.\thequiz.\thequizquestion}{\faIcon[regular]{square}}%
1345        }%
1346        %\makebox[0pt][l]{\actionsocg{#1}{}{verify:\thequizquestion}{\faSquareO}}%
1347        \begin{ocg}{#1}{#1}{off}% choice layer
1348          %\makebox[\widthof{\faSquareO}]{\textcolor{green!60!black}{\faCheck}}%
1349          \hspace*{-\quizcheckboxwidth}%
1350          \makebox[\quizcheckboxwidth][c]{\textcolor{green!60!black}{\faCheckSquare}}%
1351          \hspace*{-\quizcheckboxwidth}%
1352          \makebox[\quizcheckboxwidth][c]{\textcolor{askreplyfirstcolor}{\faIcon[regular]{square}}}%
1353        \end{ocg}%
1354    }
1355
1356    \NewDocumentCommand{\quizMultipleButtonDemo}{m}{%
1357        % Syntax - #1: choice id for answering proposal
1358        % Action on click: toggle myself (choice layer), hide verifcation layer
1359        \stepcounter{mcqproposaldemo}%
1360        \stepcounter{mcqquiztotaldemo}%
1361        \setlength{\quizcheckboxwidth}{\widthof{\faIcon[regular]{square}}}%
1362        \makebox[\quizcheckboxwidth][c]{%
1363          \actionsocg{#1}{}{verify.\thequizdemo.\themcqdemo}{\faIcon[regular]{square}}%
1364        }%
1365        \begin{ocg}{#1}{#1}{off}% choice layer
1366          \hspace*{-\quizcheckboxwidth}%
```

```latex
1367        \makebox[\quizcheckboxwidth][c]{\textcolor{green!60!black}{\faCheckSquare}}%
1368        \hspace*{-\quizcheckboxwidth}%
1369        \makebox[\quizcheckboxwidth][c]{\textcolor{askreplyfirstcolor}{\faIcon[regular]{square}}}}%
1370      \end{ocg}%
1371    }
1372
1373    %- Defining a proposition for multiple solution MCQ
1374
1375    \NewDocumentCommand{\mcqproposalMultiple}{o m}{%
1376      % Syntax — #1 = more tcbox options
1377      %          #2 = answering proposal/statement
1378      \begin{tcolorbox}[%
1379        breakable, enhanced,
1380        notitle, colframe=black!60, colback=white,
1381        boxrule=0.2pt, arc=0.4pt, boxsep = 0pt,
1382        left = 4pt, right = 4pt,
1383        top = 4pt, bottom = 4pt,
1384        before skip=4pt, after skip=4pt,
1385        IfValueTF={#1}{#1}{},% More options
1386        ]
1387      \parbox[t]{16pt}{%
1388        \hspace*{2pt}%
1389        %\quizMultipleButton{mcqproposalref:\thequizquestion:\themcqproposal}%
1390        \quizMultipleButton{mcqproposalref.\thequiz.\thequizquestion.\themcqproposal}%
1391      }%
1392      \parbox[t]{\linewidth-16pt}{#2}%
1393    \end{tcolorbox}%
1394  }
1395
1396  \NewDocumentCommand{\mcqproposalMultipleDemo}{o m}{%
1397    % Syntax — #1 = more tcbox options
1398    %          #2 = answering proposal/statement
1399    \begin{tcolorbox}[%
1400      breakable, enhanced,
1401      notitle, colframe=black!60, colback=white,
1402      boxrule=0.2pt, arc=0.4pt, boxsep = 0pt,
1403      left = 4pt, right = 4pt,
1404      top = 4pt, bottom = 4pt,
1405      before skip=4pt, after skip=4pt,
1406      IfValueTF={#1}{#1}{},% More options
1407      ]
1408    \parbox[t]{16pt}{%
1409      \hspace*{2pt}%
1410      \quizMultipleButtonDemo{mcqproposalref.\thequizdemo.\themcqdemo.\themcqproposaldemo}%
1411    }%
1412    \parbox[t]{\linewidth-16pt}{#2}%
1413  \end{tcolorbox}%
1414  }
1415
1416  %--- Note: Splitting a list of arguments
1417  %-------------------------------------
1418  %- See our review and especially Marcel Kruger's answer (LaTeX3 syntax) in:
1419  %-   https://tex.stackexchange.com/questions/493987/[...]
1420  %-     [...]ocgx2-xparse-expl3-splitting-comma-separated-ocmd-ocgs-lists-of-arguments-for
1421  %- See also, for example, Enrico Gregorio's and David Carlisle's answers:
1422  %-   https://tex.stackexchange.com/questions/110898/package-xparse-splitlist-last-token
1423  %-   https://tex.stackexchange.com/questions/348042/splitlist-on-several-delimiters
1424  %-----
```

```
1425
1426   %- Setting OCGs reference names: LaTeX3 syntax because of its use by the `ocgx2` package
1427
1428   \NewDocumentCommand{\askreplymcqArgsIds}{m}{%
1429     %mcqproposalref:\thequizquestion:#1%
1430     mcqproposalref.\thequiz.\thequizquestion.#1%
1431   }
1432
1433   \NewDocumentCommand{\askreplymcqArgsIdsDemo}{m}{%
1434     mcqproposalref.\thequizdemo.\themcqdemo.#1%
1435   }
1436
1437   %- Defining a sequence for storing the "massaged" items
1438
1439   \ExplSyntaxOn
1440
1441   \cs_new_protected:Npn \askreplymcq_process_list:Nn #1 #2
1442     {
1443       % clear the sequence
1444       \seq_clear:N #1
1445       % cycle through the arguments, storing "\mcqArgsIds{<arg>}" in the sequence
1446       \clist_map_inline:nn { #2 }
1447         {
1448           % Here :Nx instead of :Nn ensures that \askreplymcqArgsIds
1449           % is actually evaluated instead of passed as-is
1450           \seq_put_right:Nx #1 { \askreplymcqArgsIds{##1} }
1451         }
1452     }
1453
1454   \cs_new_protected:Npn \askreplymcqdemo_process_list:Nn #1 #2
1455     {
1456       % clear the sequence
1457       \seq_clear:N #1
1458       % cycle through the arguments, storing "\mcqArgsIdsDemo{<arg>}" in the sequence
1459       \clist_map_inline:nn { #2 }
1460         {
1461           % Here :Nx instead of :Nn ensures that \askreplymcqArgsIdsDemo
1462           % is actually evaluated instead of passed as-is
1463           \seq_put_right:Nx #1 { \askreplymcqArgsIdsDemo{##1} }
1464         }
1465     }
1466
1467   %- Defining a "Verify" button both for single and multiple MCQs
1468
1469   \seq_new:N \l_correct_seq
1470   \seq_new:N \l_wrong_seq
1471
1472   \cs_new_protected:Npn \askreplymcq__verify:nn #1 #2
1473     {
1474       %\showocg{verify:\thequizquestion}{%
1475       % ONLY USE POINT AS SEPARATOR: ERROR WITH COLON AND @ --> WHY?
1476       \showocg{verify.\thequiz.\thequizquestion}{%
1477         \begin{tikzpicture}
1478           \node[quizbutton=askreplybuttongray] (checksolutionbutton)
1479             {\strut\scriptsize\lightbf{\textsc{\sffamily\quizverifyname}}};%
1480         \end{tikzpicture}%
1481       }
1482       %\begin{ocg}{verify:\thequizquestion}{verify:\thequizquestion}{off}% verification layer
```

```
1483    \begin{ocg}{verify.\thequiz.\thequizquestion}{verify.\thequiz.\thequizquestion}{off}% verification
            layer
1484      \makebox[0pt][l]{%
1485        \begin{ocmd}{\Not{\And{#1,\Not{\Or{#2}}}}}% "wrong" layer (OCMD)
1486          \hspace*{0.25em}%
1487          \raisebox{5pt}{\textcolor{red!60!black}{\faTimes}}%Wrong.
1488        \end{ocmd}%
1489      }%
1490      \begin{ocmd}{\And{#1,\Not{\Or{#2}}}}% "correct" layer (OCMD)
1491        \hspace*{0.25em}%
1492        \raisebox{5pt}{\textcolor{green!60!black}{\faCheck}}%Correct.
1493      \end{ocmd}%
1494    \end{ocg}%
1495  }
1496
1497 \cs_new_protected:Npn \askreplymcqdemo__verify:nn #1 #2
1498   {
1499    %\showocg{verify:\thequizquestion}{%
1500    % ONLY USE POINT AS SEPARATOR: ERROR WITH COLON AND @ --> WHY?
1501    \showocg{verify.\thequizdemo.\themcqdemo}{%
1502      \begin{tikzpicture}
1503        \node[quizbutton=askreplybuttongray] (checksolutionbutton)
1504          {\strut\scriptsize\lightbf{\textsc{\sffamily\quizverifyname}}};%
1505      \end{tikzpicture}%
1506    }
1507    %\begin{ocg}{verify:\thequizquestion}{verify:\thequizquestion}{off}% verification layer
1508    \begin{ocg}{verify.\thequizdemo.\themcqdemo}{verify.\thequizdemo.\themcqdemo}{off}% verification
            layer
1509      \makebox[0pt][l]{%
1510        \begin{ocmd}{\Not{\And{#1,\Not{\Or{#2}}}}}% "wrong" layer (OCMD)
1511          \hspace*{0.25em}%
1512          \raisebox{5pt}{\textcolor{red!60!black}{\faTimes}}%Wrong.
1513        \end{ocmd}%
1514      }%
1515      \begin{ocmd}{\And{#1,\Not{\Or{#2}}}}% "correct" layer (OCMD)
1516        \hspace*{0.25em}%
1517        \raisebox{5pt}{\textcolor{green!60!black}{\faCheck}}%Correct.
1518      \end{ocmd}%
1519    \end{ocg}%
1520   }
1521
1522 \cs_generate_variant:Nn \askreplymcq__verify:nn {ff}
1523
1524 \cs_generate_variant:Nn \askreplymcqdemo__verify:nn {ff}
1525
1526 \NewDocumentCommand{\mcqverify}{ m m }{%
1527   % Syntax - #1: list of OCG ids of correct/required answer(s), comma separated
1528   %          #2: list of OCG ids of wrong answer(s), comma separated
1529   \askreplymcq_process_list:Nn \l_correct_seq { #1 }% Save OCMD IDs as LaTeX3 seq variable
1530   \askreplymcq_process_list:Nn \l_wrong_seq { #2 }% Save OCMD IDs as LaTeX3 seq variable
1531   \askreplymcq__verify:ff { \seq_use:Nn \l_correct_seq {,} } { \seq_use:Nn \l_wrong_seq {,} }
1532 }
1533
1534 \NewDocumentCommand{\mcqverifydemo}{ m m }{%
1535   % Syntax - #1: list of OCG ids of correct/required answer(s), comma separated
1536   %          #2: list of OCG ids of wrong answer(s), comma separated
1537   \askreplymcqdemo_process_list:Nn \l_correct_seq { #1 }% Save OCMD IDs as LaTeX3 seq variable
1538   \askreplymcqdemo_process_list:Nn \l_wrong_seq { #2 }% Save OCMD IDs as LaTeX3 seq variable
```

```latex
1539      \askreplymcqdemo__verify:ff { \seq_use:Nn \l_correct_seq {,} } { \seq_use:Nn \l_wrong_seq {,} }
1540    }
1541
1542    \ExplSyntaxOff
1543
1544    %- Defining a "Reset" button both for single and multiple MCQs: "old fashion" but works
1545
1546    \NewDocumentCommand{\mcqreset}{}{%
1547      \def\ocglistreset{}%
1548      \xdef\ocglistreset{%
1549        %\ocglistreset\space verify:\thequizquestion\space showanswer:\thequizquestion}%
1550        %\ocglistreset\space verify:\thequizquestion\space showanswer:\thequiz:\thequizquestion}%
1551        \ocglistreset\space verify.\thequiz.\thequizquestion\space showanswer.\thequiz.\thequizquestion}%
1552      \foreach \X in {1,...,\value{mcqquiztotal}} {%
1553        %\xdef\ocglistreset{\ocglistreset\space mcqproposalref:\thequizquestion:\X}%
1554        \xdef\ocglistreset{\ocglistreset\space mcqproposalref.\thequiz.\thequizquestion.\X}%
1555      }%
1556      \hideocg{\ocglistreset}{%
1557        \begin{tikzpicture}
1558          \node[quizbutton=askreplybuttongray] (resetbutton)
1559            {\strut\scriptsize\lightbf{\textsc{\sffamily\quizresetname}}};
1560        \end{tikzpicture}%
1561      }%
1562    }
1563
1564    \NewDocumentCommand{\mcqresetdemo}{}{%
1565      \def\ocglistreset{}%
1566      \xdef\ocglistreset{%
1567        \ocglistreset\space verify.\thequizdemo.\themcqdemo\space showanswer.\thequizdemo.\themcqdemo}%
1568      \foreach \X in {1,...,\value{mcqquiztotaldemo}} {%
1569        \xdef\ocglistreset{\ocglistreset\space mcqproposalref.\thequizdemo.\themcqdemo.\X}%
1570      }%
1571      \hideocg{\ocglistreset}{%
1572        \begin{tikzpicture}
1573          \node[quizbutton=askreplybuttongray] (resetbutton)
1574            {\strut\scriptsize\lightbf{\textsc{\sffamily\quizresetname}}};
1575        \end{tikzpicture}%
1576      }%
1577    }
1578
1579    %- Defining the "Reset" button (both for single and multiple MCQs)
1580
1581    \ExplSyntaxOn
1582
1583    \NewDocumentCommand{\mcqresetButton}{m}{% AG's definition (LaTeX3): to be adapted (see \mcqreset)
1584      % Syntax – #1: list of OCG ids, comma separated
1585      \clist_set:Nn\l_tmpa_clist{#1} % save OCG ids as LaTeX3 clist variable
1586      \hideocg{\clist_use:Nn\l_tmpa_clist{~}}{\fbox{\strut\sffamily\quizresetname}}%
1587    }
1588
1589    \ExplSyntaxOff
1590
1591    %- Defining a "Show/Hide answer" button both for single and multiple MCQs
1592
1593    \NewDocumentCommand{\mcqdisplayanswer}{ s O{b} m D(){6pt,12pt} }{%
1594      % Syntax – #1: switch between answer in the margin (no star) and as tooltip (star)
1595      %          #2: position [b]/[c]/[t] for answer in the margin
1596      %          #3: explanation text to display
```

```latex
1597      %              #4: position control (<xshift-length>,<yshift-length>) for answer in as tooltip
1598      \makebox[0pt][l]{%
1599        %\actionsocg{showanswer:\thequizquestion}{}{verify:\thequizquestion}{%
1600        %\actionsocg{showanswer.\thequiz:\thequizquestion}{}{verify:\thequizquestion}{%
1601        \actionsocg{showanswer.\thequiz.\thequizquestion}{}{verify.\thequiz.\thequizquestion}{%
1602          \begin{tikzpicture}
1603            \node[quizbutton=askreplybuttongray] (displayshowanswerbutton)
1604              {\strut\scriptsize\lightbf{\textsc{\sffamily\quizshowanswername}}};%
1605          \end{tikzpicture}%
1606        }%
1607      }%
1608      %\begin{ocg}{showanswer:\thequizquestion}{showanswer:\thequizquestion}{off}% show/hide answer layer
1609      %\begin{ocg}{showanswer\thequiz:\thequizquestion}{showanswer:\thequiz:\thequizquestion}{off}% show/
              hide answer layer
1610      \begin{ocg}{showanswer.\thequiz.\thequizquestion}{showanswer.\thequiz.\thequizquestion}{off}% show/
              hide answer layer
1611        \makebox[\quizanswerbuttonwidth][l]{%
1612          \begin{tikzpicture}
1613            \node[quizbutton={black!60!white}] (displayhideanswerbutton)
1614              {\strut\scriptsize\lightbf{\textsc{\sffamily\quizhideanswername}}};%
1615          \end{tikzpicture}%
1616        }%
1617        \IfBooleanTF{#1}
1618          {\mcqtooltip{#3}(#4)}%
1619          {\mcqmarginbox[#2]{#3}}%
1620      \end{ocg}
1621    }
1622
1623    \NewDocumentCommand{\mcqdisplayanswerdemo}{ s O{b} m D(){6pt,12pt} }{%
1624      % Syntax – #1: switch between answer in the margin (no star) and as tooltip (star)
1625      %          #2: position [b]/[c]/[t] for answer in the margin
1626      %          #3: explanation text to display
1627      %          #4: position control (<xshift-length>,<yshift-length>) for answer in as tooltip
1628      \makebox[0pt][l]{%
1629        \actionsocg{showanswer.\thequizdemo.\themcqdemo}{}{verify.\thequizdemo.\themcqdemo}{%
1630          \begin{tikzpicture}
1631            \node[quizbutton=askreplybuttongray] (displayshowanswerbutton)
1632              {\strut\scriptsize\lightbf{\textsc{\sffamily\quizshowanswername}}};%
1633          \end{tikzpicture}%
1634        }%
1635      }%
1636      \begin{ocg}{showanswer.\thequizdemo.\themcqdemo}{showanswer.\thequizdemo.\themcqdemo}{off}% show/hide
              answer layer
1637        \makebox[\quizanswerbuttonwidth][l]{%
1638          \begin{tikzpicture}
1639            \node[quizbutton={black!60!white}] (displayhideanswerbutton)
1640              {\strut\scriptsize\lightbf{\textsc{\sffamily\quizhideanswername}}};%
1641          \end{tikzpicture}%
1642        }%
1643        \IfBooleanTF{#1}
1644          {\mcqtooltip{#3}(#4)}%
1645          {\mcqmarginbox[#2]{#3}}%
1646      \end{ocg}
1647    }
1648
1649    %- Defining a macro to display the answer in the margin
1650
1651    \newcommand\mcqtikzmark[1]{%
```

```latex
1652      \tikz[remember picture,overlay]\node[inner xsep=0pt,outer sep=0pt] (#1) {};}
1653
1654  \newlength{\quiztrianglexshift}
1655  \newlength{\quizuppertrianglecorner}
1656  \newlength{\quizboxhshift}
1657  \newlength{\quizboxvshift}
1658  \newlength{\quiznoteheight}
1659
1660  \newcommand\quizside{}
1661  \newcommand\quizotherside{}
1662  \newcommand\quizpointeranchor{}
1663  \newcommand\quizboxanchor{}
1664
1665  \newcounter{mcqdisplaycount}
1666
1667  %\NewDocumentCommand{\mcqmarginbox}{O{b} O{askreplythirdcolor} O{\quizexplanationname} m}{%
1668  \NewDocumentCommand{\mcqmarginbox}{O{b} m}{%
1669    \checkoddpage
1670    \ifoddpageoroneside
1671      \setlength\quiztrianglexshift{-3pt}%
1672      \setlength\quizboxhshift{\marginparsep}% Original setting (Gonzalo Medina): see \caution
1673      %\addtolength\quizboxhshift{\marginparsep}% Why? Side effect of `tcolorbox` package?
1674      \addtolength\quizboxhshift{16pt}% Because inside two tcboxes: quiz + question -> leftsep=10pt+6pt
1675      \addtolength\quizboxhshift{16pt}% Because inside two tcboxes: quiz + question -> rightsep=10pt+6pt
1676      %\addtolength\quizboxhshift{3pt}% Adding quiztrianglexshift
1677      \addtolength\quizboxhshift{-3pt}% Adding quiztrianglexshift
1678      \addtolength\quizboxhshift{-0.4pt}% Subtracting 0.5 box linewidth (thick = 0.8pt): see \tikz below
1679      \renewcommand{\quizside}{west}%
1680      \renewcommand{\quizotherside}{east}%
1681    \else
1682      \setlength\quiztrianglexshift{3pt}%
1683      \setlength\quizboxhshift{-\marginparsep}%
1684      \renewcommand{\quizside}{east}%
1685      \renewcommand{\quizotherside}{west}%
1686    \fi%
1687    \settoheight{\quiznoteheight}{%
1688      \ifstrempty{#2}%
1689        {\parbox{\marginparwidth-8pt-0.8pt}{%
1690          \footnotesize\ttfamily Sorry, no answer available}}%
1691        {\parbox{\marginparwidth-8pt-0.8pt}{\footnotesize #2}}%
1692    }% thick=0.8pt
1693    \stepcounter{mcqdisplaycount}%
1694    \mcqtikzmark{\themcqdisplaycount}%
1695    \if#1b\relax
1696      \renewcommand\quizpointeranchor{mcqdisplaycount\themcqdisplaycount.south \quizside}%
1697      \renewcommand\quizboxanchor{south \quizside}%
1698      \setlength\quizboxvshift{\quiznoteheight}%
1699      \addtolength\quizboxvshift{-.6\baselineskip}% Adjust the vertical shift with the text line
1700      \setlength\quizuppertrianglecorner{13pt}%
1701    \else
1702      \if#1t\relax
1703        \renewcommand\quizpointeranchor{mcqdisplaycount\themcqdisplaycount.north \quizside}%
1704        \renewcommand\quizboxanchor{north \quizside}%
1705        \setlength\quizboxvshift{-\quiznoteheight}%
1706        \addtolength\quizboxvshift{.6\baselineskip}% Adjust the vertical shift with the text line
1707        \setlength\quizuppertrianglecorner{-7pt}%
1708      \else
1709        \if#1c\relax
```

```
1710        \renewcommand\quizpointeranchor{mcqdisplaycount\themcqdisplaycount.\quizside}%
1711        \renewcommand\quizboxanchor{\quizside}%
1712        %\setlength\quizboxvshift{\baselineskip}% No vertical shift, just centered with the text line
1713        % We try here to align the bottom margin box with the one of the quiz question tcbox
1714        %\addtolength\quizboxvshift{\quiznoteheight}% Empirical/test value
1715        %\addtolength\quizboxvshift{-4pt}% bottomsep = 4pt
1716        \setlength\quizuppertrianglecorner{3pt}%
1717      \fi%
1718    \fi%
1719  \fi%
1720  \marginnote{%
1721    \begin{tikzpicture}[remember picture, overlay]
1722      \node[draw=askreplythirdcolor, line width=0.8pt, anchor=\quizside,
1723          xshift=\quizboxhshift, yshift=\quizboxvshift, inner sep=4pt]
1724      (mcqdisplaycount\themcqdisplaycount)
1725      at ([yshift=3pt]current page text area.\quizotherside|-\themcqdisplaycount)
1726      {%
1727        \ifstrempty{#2}%
1728          {\parbox{\marginparwidth-8pt-0.8pt}{%
1729            \footnotesize\ttfamily Sorry, no answer available}}%
1730          {\parbox{\marginparwidth-8pt-0.8pt}{\vskip4pt\footnotesize #2\vskip2pt}}%
1731      };% thick=0.8pt
1732      \node[fill=white, font=\color{askreplythirdcolor}\sffamily, anchor=west,
1733          inner sep=2pt, xshift=7pt, yshift=0pt]
1734      at (mcqdisplaycount\themcqdisplaycount.north west)
1735      {\small\enspace\textcolor{black}{\textsc{\footnotesize\quizexplanationname}}\enspace};
1736      \fill[askreplythirdcolor]
1737        ([yshift=\quizuppertrianglecorner]\quizpointeranchor) --
1738        ([yshift=\quizuppertrianglecorner-3pt,xshift=\quiztrianglexshift]\quizpointeranchor) --
1739        ([yshift=\quizuppertrianglecorner-6pt]\quizpointeranchor) -- cycle;
1740    \end{tikzpicture}%
1741  }%
1742 }

1744 %- Defining "tooltip" commands to display answers (the margin displaying is not always relevant)

1746 %--- Note: How to define tooltips
1747 %-------------------------------
1748 %- For the moment being (fall 2019), only AR and Evince viewer supports tooltips (like for OCGs).
1749 %- From: https://tex.stackexchange.com/questions/155518/tooltip-that-works-with-all-pdf-readers
1750 %- Important update: since spring 2020 OCG, OCMG and JavaScript are supported by Okular!
1751 %- See: https://tex.stackexchange.com/questions/235139/using-the-animate-package-without-adobe
1752 %-----

1754 \ExplSyntaxOn
1755 \let\askreplytpPdfLink\pbs_pdflink:nn
1756 \let\askreplycListSet\clist_set:Nn
1757 \let\askreplycListItem\clist_item:Nn
1758 \ExplSyntaxOff

1760 \newsavebox\askreplytiptext\newcounter{askreplytcnt}

1762 \newlength{\askreplywhatsleft}
1763 \newlength{\askreplytipshift}

1765 \NewDocumentCommand{\mcqtooltip}{ m D(){0pt,0pt} }{%
1766   \leavevmode%
1767   \sbox\askreplytiptext{%
```

```
1768    \tcbox[enhanced, colframe=askreplythirdcolor, colback=white, boxrule=0.8pt,
1769        attach boxed title to top left={xshift=7pt, yshift=-\tcboxedtitleheight/2},
1770        boxed title style={boxrule=0pt,colframe=white,colback=white,
1771          boxsep=0pt, top=4pt, bottom=4pt},
1772        coltitle=black, %toptitle=9pt, bottomtitle=0pt,
1773        title=\quizexplanationname, fonttitle=\footnotesize\scshape\sffamily,
1774        boxsep=2pt, left=2pt, right=2pt, top=5pt, bottom=2pt, sharp corners]{%
1775      \ifstrempty{#1}
1776        {\parbox{\marginparwidth-8pt-0.8pt}{\footnotesize\ttfamily Sorry, no answer available}}%
1777        {\parbox{\marginparwidth-8pt-0.8pt}{\footnotesize #1}}%
1778      }%
1779    }%
1780    \askreplycListSet\askreplytpOffsets{#2}%
1781    \edef\askreplytwd{\the\wd\askreplytiptext}%
1782    \edef\askreplytht{\the\ht\askreplytiptext}%
1783    \edef\askreplytdp{\the\dp\askreplytiptext}%
1784    \askreplytipshift=0pt%
1785    %OCG-based (that is, all non-draggable) boxes should not extend beyond the
1786    %current column as they may get overlaid by text in the neighbouring column
1787    %\setlength\askreplywhatsleft{\linegoal}%
1788    %\ifdim\askreplywhatsleft<\dimexpr\askreplytwd+\askreplycListItem\askreplytpOffsets{1}\relax%
1789    %  \setlength\askreplytipshift{\askreplywhatsleft-\twd-\askreplycListItem\askreplytpOffsets{1}}%
1790    %\fi%
1791    \raisebox{\heightof{#1}+\askreplytdp+\askreplycListItem\askreplytpOffsets{2}}[0pt][0pt]{%
1792      \makebox[0pt][l]{%
1793        \hspace{\dimexpr\askreplytipshift+\askreplycListItem\askreplytpOffsets{1}\relax}%
1794        \usebox{\askreplytiptext}%
1795      }%
1796    }%
1797 }
1798
1799 \NewDocumentCommand{\mcqtooltiporiginal}% Simplified version for Evince (and AR and new Okular)
1800    { O{\ifdefined\@linkcolor\@linkcolor\else blue\fi} m O{yellow!20} m O{0pt,0pt} }{%
1801    \leavevmode%
1802    %for variants with two and more stars, put tip box on a PDF Layer (OCG)
1803    \ocgbase@new@ocg{askreplytipOCG.\theaskreplytcnt}{%
1804      /Print<</PrintState/OFF>>/Export<</ExportState/OFF>>%
1805    }{false}%
1806    \xdef\askreplytpTipOcg{\ocgbase@last@ocg}%
1807    %prevent simultaneous visibility of multiple non-draggable tooltips
1808    \ocgbase@add@ocg@to@radiobtn@grp{askreplytool@tips}{\ocgbase@last@ocg}%
1809    \askreplytpPdfLink{%
1810      /Subtype/Link/Border[0 0 0]/A <</S/SetOCGState/State [/Toggle \askreplytpTipOcg]>>
1811    }{\textcolor{#1}{#2}}%
1812    \sbox\askreplytiptext{%
1813      \ocgbase@oc@bdc{\askreplytpTipOcg}%
1814      \ocgbase@open@stack@push{\askreplytpTipOcg}%
1815      %\fcolorbox{black}{#3}{#4}%
1816      \tcbox[colframe=black,colback=#3,size=fbox,arc=1ex,sharp corners=southwest]{#4}%
1817      \ocgbase@oc@emc\ocgbase@open@stack@pop\askreplytpNull%
1818    }%
1819    \askreplycListSet\askreplytpOffsets{#5}%
1820    \edef\askreplytwd{\the\wd\askreplytiptext}%
1821    \edef\askreplytht{\the\ht\askreplytiptext}%
1822    \edef\askreplytdp{\the\dp\askreplytiptext}%
1823    \askreplytipshift=0pt%
1824    %OCG-based (that is, all non-draggable) boxes should not extend beyond the
1825    %current column as they may get overlaid by text in the neighbouring column
```

```latex
     \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
  %\setlength{\exerciseheight}{\pgfmathresult}
  %\addtolength{\exerciseheight}{-\pgf@ya}
  \draw[->,red,>=latex] (#2.north) -- (#3.south);%
  %Out: \the#1
}
\newcommand\getheightofnode[2]{
    \pgfextracty{#1}{\pgfpointanchor{#2}{north}}
```

```latex
      \pgfextracty{\pgf@ya}{\pgfpointanchor{#2}{south}}
      \addtolength{#1}{-\pgf@ya}
}

\newlength{\parline}
\newlength{\paroutindent}
\newlength{\lineheight}
\setlength{\lineheight}{\heightof{abcdefghijklmnoprstuvwxyz}}

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

%- https://tex.stackexchange.com/questions/402779/[...]
%-    [...]how-can-i-calculate-a-number-of-lines-needed-to-fit-the-text/
\newcounter{askreplycountlines}
\newcommand{\askreplynumberoflines}[2][\linewidth]{% #1=width (optional), #2=text
  \bgroup
  \hsize=#1\relax
  \clubpenalty=0
  \widowpenalty=0
  \displaywidowpenalty=0
  \predisplaypenalty=0
  \postdisplaypenalty=0
  \interlinepenalty=0
  \setbox0=\vbox{#2}%
  \setcounter{askreplycountlines}{0}%
  \loop\ifdim\ht0>0pt
    \stepcounter{askreplycountlines}%
    \setbox1=\vsplit0 to 0pt
  \repeat
\egroup}% \theaskreplycountlines

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%------ Typical usage
%-
%- Exercise environment
%----------------------
%- \begin{exercise}[<options comma separated>]
%-   Stuff...
%-   \begin{subexercise}[<tcolorbox options>]{<optional title>}
%-     Stuff...
%-   \end{subexercise}
%-   \begin{subexercise}[<tcolorbox options>]{<optional title>}
%-     Stuff...
%-   \end{subexercise}
%-   Stuff...
%- \end{exercise}
%- Options: display=true/false (default=true) ; storing=true/false (default=true)
%-          list=true/false (default=true) adding a entry in the list of exercises
%-          title={<optional title>} (no default), before skip=<length>, after skip=<length>,
%-          level=<basic>/<intermediate>/<advanced> (no default)
%-
%- Solution environment
```

```
1942   %---------------------
1943   %- \begin{solution}[<options comma separated>]
1944   %-   Stuff...
1945   %-   \begin{subsolution}[<tcolorbox options>]
1946   %-     Stuff...
1947   %-   \end{subsolution}
1948   %-   \begin{subsolution}[<tcolorbox options>]
1949   %-     Stuff...
1950   %-   \end{subsolution}
1951   %-   Stuff...
1952   %- \end{solution}
1953   %- Options: display=true/false (default=true) ; storing=true/false (default=true)
1954   %-          ID=<number of the exercise> (no default), before skip=<length>, after skip=<length>
1955   %- The solution ID number is automatically set in the sequence of the exercises. But in case
1956   %- an exercise has no solution, one must restart the sequence with the correct ID number.
1957   %-
1958   %- Quiz environment
1959   %------------------
1960   %- \begin{quiz}[<options comma separated>]
1961   %-   \begin{quizquestion}<#1>[#2]{#3}{#4}{#5}(#6)<#7> (see below)
1962   %-     \mcqprosal{stuff}
1963   %-     etc.
1964   %-   \end{quizquestion}
1965   %-   \begin{quizquestion*}<#1>[#2]{#3}{#4}{#5}(#6)<#7> (see below)
1966   %-     \mcqprosal{stuff}
1967   %-     etc.
1968   %-   \end{quizquestion*}
1969   %- \end{quiz}
1970   %- Options: display=true/false (default=true) ; storing=true/false (default=true)
1971   %-          list=true/false (default=true) adding a entry in the list of quizzes
1972   %-          title={<optional title>} (no default), before skip=<length>, after skip=<length>
1973   %-
1974   %- Quizquestion environment (multiple answers)
1975   %--------------------------------------------
1976   %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
1977   %         [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
1978   %         {#3} = Mandatory correct answer numbers comma separated
1979   %         {#4} = Mandatory wrong answer numbers comma separated
1980   %         {#5} = Optional title
1981   %         (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
1982   %         <#7> = Optional explanation text of the answer (usually given ;-)
1983   %- \begin{quizquestion}<#1>[#2]{#3}{#4}{#5}(#6)<#7>
1984   %-   \mcqproposal{stuff-one>}
1985   %-   \mcqproposal{stuff-two>}
1986   %-   \mcqproposal{stuff-three>}
1987   %-   \mcqproposal{stuff-four>}
1988   %-   etc.
1989   %- \end{quizquestion}
1990   %-
1991   %- Quizquestion* environment (single exclusive answer)
1992   %----------------------------------------------------
1993   %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
1994   %         [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
1995   %         {#3} = Mandatory correct answer number (only one)
1996   %         {#4} = Mandatory wrong answer numbers comma separated
1997   %         {#5} = Optional title
1998   %         (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
1999   %         <#7> = Optional explanation text of the answer (usually given ;-)
```

```
2000  %- \begin{quizquestion*}<#1>[#2]{#3}{#4}{#5}(#6)<#7>
2001  %-   \mcqproposal{stuff-one>}
2002  %-   \mcqproposal{stuff-two>}
2003  %-   \mcqproposal{stuff-three>}
2004  %-   \mcqproposal{stuff-four>}
2005  %-  etc.
2006  %- \end{quizquestion*}
2007  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

2009  \iftoggle{askreply@points}{% With `assignpoints' package
2010    %
2011    %- Exercise environment
2012    %---------------------
2013    \RenewDocumentEnvironment{exercise}{  }{%
2014      \catcode`\^^M=\active
2015      \@ifnextchar[%
2016        {\catcode`\^^M=5 \exercise@start}
2017        {\catcode`\^^M=5 \exercise@start[]}
2018    }{%
2019      \endVerbatimOut%
2020      %\VerbatimInput{\askreply@outfilename}%
2021      %\settototalheight{\askreply@detect@boxheight}{%
2022      %  \parbox{\linewidth}{%
2023      %    \input{\exercisesdir|jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}
2024      %  }%
2025      %}
2026      \ifaskreply@display
2027        \ifdefstring{\askreply@level}{basic}%
2028          {%
2029            \toggletrue{askreply@level@display@on}%
2030            \gdef\asreply@firstlevel@color{askreplythirdcolor}%
2031            \gdef\asreply@secondlevel@color{lightgray}%
2032            \gdef\asreply@thirdlevel@color{lightgray}%
2033            %\marginnote{level=basic}%
2034          }%
2035          {\ifdefstring{\askreply@level}{intermediate}%
2036            {%
2037              \toggletrue{askreply@level@display@on}%
2038              \gdef\asreply@firstlevel@color{lightgray}%
2039              \gdef\asreply@secondlevel@color{askreplythirdcolor}%
2040              \gdef\asreply@thirdlevel@color{lightgray}%
2041              %\marginnote{level=intermediate}%
2042            }%
2043            {\ifdefstring{\askreply@level}{advanced}%
2044              {%
2045                \toggletrue{askreply@level@display@on}%
2046                \gdef\asreply@firstlevel@color{lightgray}%
2047                \gdef\asreply@secondlevel@color{lightgray}%
2048                \gdef\asreply@thirdlevel@color{askreplythirdcolor}%
2049                %\marginnote{level=advanced}%
2050              }%
2051              {}%\marginnote{level=none}}%
2052            }%
2053          }%
2054        \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip]
2055          % Empty versus non-empty exercise title
2056          \iftoggle{assignpoints@checkemptystring}%
2057            {\strut\lightbf{\sffamily\exercisename\space\currentexercisenumber}%
```

```latex
2058                  \hfill{\small\sffamily\displaypoints*[exercise]{\currentexercisenumber}}%
2059               }%
2060               {\strut\lightbf{\sffamily\exercisename\space\currentexercisenumber}%
2061                  \enspace\textemdash\enspace\sffamily\currentexercisetitle%
2062                  \hfill{\small\normalfont\sffamily\displaypoints*[exercise]{\currentexercisenumber}}%
2063               }%
2064           \end{tcolorbox}\nopagebreak%
2065           \askreplybox
2066             \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{askreplyfirstcolor}}%
2067               \input{\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2068               \askreplynumberoflines{%
2069                 \let\pointsoriginal\points% Not to count points twice
2070                 \let\points\phantom%
2071                 \input{\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2072                 \let\points\pointsoriginal
2073               }%
2074               %NoL: |theaskreplycountlines
2075               \par\phantomtext%
2076               %|vspace{-.5|baselineskip}%
2077               \ifdefempty{\solutionID}%
2078                 {\ifnumequal{\theaskreplycountlines}{1}{\par\vspace{-0.6\baselineskip}}{}}%
2079                 {\par\hfill\raisebox{-2.5pt}{%
2080                     \textcolor{askreplysecondcolor}{%
2081                       %SolutionID: |solutionID|quad%
2082                       \itshape\footnotesize{\normalfont\faSquare}%
2083                         \enspace Solution\space page~\pageref{solution:\solutionID}%
2084                         %|enspace Solution page~|pageref{solution:|theexercise}%
2085                 }}%
2086               }%
2087             \endtikzpagelayer
2088             %|par|vspace{|dimexpr.5|baselineskip|relax}%
2089           \endaskreplybox
2090           %|zsaveposy{stopexercise}
2091           %Space: |the|dimexpr|zposy{startexercise}sp-|zposy{stopexercise}sp|relax
2092           \vspace{\askreply@afterskip}%
2093         \fi
2094       \ifaskreply@storing
2095         \ifx\askreply@title\empty%
2096           \askreply@filecopytoenv%
2097             {\askreply@outfilename}%{|exercisesdir|jobname-exercise-body-|askreplytwodigits{|theexercise}.
         ltx}%
2098             {\exercisesdir\jobname-exercise-\askreplytwodigits{\theexercise}.env}%
2099             {\string\begin{exercise}}%
2100             {\string\end{exercise}}%
2101             {\string[storing=false]}%
2102         \else
2103           \askreply@filecopytoenv%
2104             {\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2105             {\exercisesdir\jobname-exercise-\askreplytwodigits{\theexercise}.env}%
2106             {\string\begin{exercise}}%
2107             {\string\end{exercise}}%
2108             {\string[storing=false, title=\askreply@title]}%
2109         \fi
2110       \fi
2111       \ifaskreply@list
2112         \addcontentsline{loe}{exercise}{\protect\numberline{\theexercise}\currentexercisetitle}%
2113       \fi
2114       \setcounter{assignpoints@maxsubexercisecount}{\theassignpoints@subexercisecount}%
```

```
2115    \assignpoints@storevaluetoaux%
2116      {\assignpointsprefix{exercise}@exercisetitle}%
2117      {\theassignpoints@exercisecount}%
2118      {\currentexercisetitle}%
2119    \assignpoints@storevaluetoaux%
2120      {\assignpointsprefix{exercise}@numberofsubexercises}%
2121      {\theassignpoints@exercisecount}%
2122      {\theassignpoints@maxsubexercisecount}%
2123    \assignpoints@storevaluetoaux%
2124      {\assignpointsprefix{exercise}@points}%
2125      {\theassignpoints@exercisecount}%
2126      {\strip@pt\assignpoints@currentexercisepoints}% https://tex.stackexchange.com/questions/2810/
2127    \global\boolfalse{assignpoints@inexercise}%
2128    \togglefalse{assignpoints@checkemptystring}%
2129    \togglefalse{askreply@level@display@on}%
2130  }
2131  \def\exercise@start[#1]{%
2132    \pgfkeys{/askreply/.cd, #1}%
2133    \ifbool{assignpoints@inexercise}%
2134      {\PackageError{assignpoints}{You cannot nest exercise environments}}%
2135      {}%
2136    \ifbool{assignpoints@exercise@layoutdefined}{}{%
2137      \PackageError{assignpoints}%
2138        {Option `customlayout' requires you to define an exercise layout using
2139        at least `\string\AtBeginExercise{...}'}%
2140    }%
2141    \global\booltrue{assignpoints@inexercise}%
2142    \stepcounter{exercise}%
2143    \getenvID[exercise]{\theexercise}%
2144    \getenvID[solution]{\theexercise}%
2145    \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2146    %\label{exercise:\theassignpoints@exercisecount}
2147    \phantomsection\label{exercise:\theexercise}% To have correct \pageref link (see TeX.SX/49061)
2148    \setlength{\assignpoints@currentexercisepoints}{0pt}%
2149    \global\assignpoints@currentexercisepoints=\assignpoints@currentexercisepoints%
2150    \ifx\askreply@title\@empty% WORKS!
2151      %\textbf{TRUE}
2152      \toggletrue{assignpoints@checkemptystring}%
2153    \else%
2154      %\textbf{FALSE}
2155      \togglefalse{assignpoints@checkemptystring}%
2156      \renewcommand{\currentexercisetitle}{\askreply@title}%
2157    \fi%
2158    %\renewcommand{\currentexercisetitle}{\askreply@title}%
2159    %\ifstrempty{\currentexercisetitle}% DOES NOT WORK! WHY?
2160    %  {\toggletrue{assignpoints@checkemptystring}\textbf{TRUE}}%
2161    %  {\togglefalse{assignpoints@checkemptystring}\textbf{FALSE}}%
2162    %\ifnum\c@exercise=0
2163    %  \setcounter{assignpoints@exercisecount}{0}% Exercise 0 is for example
2164    %  \setcounter{assignpoints@totalexercisecount}{0}%
2165    %\else
2166      \stepcounter{assignpoints@exercisecount}% Starting the numbering from "1"
2167      \stepcounter{assignpoints@totalexercisecount}%
2168    %\fi
2169    \ifcsname assignpoints@exercise@numberofsubexercises@\currentexercisenumber\endcsname%
2170      \renewcommand{\numberofsubexercises}{%
2171        \assignpoints@readvaluefromaux{exercise}{numberofsubexercises@\currentexercisenumber}}%
2172    \fi%
```

```latex
2173        \ifx\askreply@envsymbol\@empty%
2174          \renewcommand{\envsymbol}{%
2175            \normalfont\faIcon{laptop-code}}% |faIcon{feather-alt}} |faPenFancy |faMarker
2176        \else%
2177          \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2178        \fi%
2179        \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2180        \def\askreply@outfilename{%
2181          \exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2182        \VerbatimOut{\askreply@outfilename}%
2183      }
2184      \NewDocumentEnvironment{exercise*}{ o }{% Solely (no reference) or demonstration exercise
2185        \pgfkeys{/askreply/.cd, #1}%
2186        \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2187        \ifx\askreply@title\@empty% WORKS!
2188          \toggletrue{assignpoints@checkemptystring}%
2189        \else
2190          \togglefalse{assignpoints@checkemptystring}%
2191          \renewcommand{\currentexercisetitle}{\askreply@title}%
2192        \fi
2193        \ifx\askreply@envsymbol\@empty
2194          \renewcommand{\envsymbol}{%
2195            \normalfont\faIcon{laptop-code}}% |faIcon{feather-alt}} |faPenFancy |faMarker
2196        \else
2197          \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2198        \fi
2199        \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2200        \ifdefstring{\askreply@level}{basic}%
2201          {%
2202            \toggletrue{askreply@level@display@on}%
2203            \gdef\asreply@firstlevel@color{askreplythirdcolor}%
2204            \gdef\asreply@secondlevel@color{lightgray}%
2205            \gdef\asreply@thirdlevel@color{lightgray}%
2206          }%
2207          {\ifdefstring{\askreply@level}{intermediate}%
2208            {%
2209              \toggletrue{askreply@level@display@on}%
2210              \gdef\asreply@firstlevel@color{lightgray}%
2211              \gdef\asreply@secondlevel@color{askreplythirdcolor}%
2212              \gdef\asreply@thirdlevel@color{lightgray}%
2213            }%
2214            {\ifdefstring{\askreply@level}{advanced}%
2215              {%
2216                \toggletrue{askreply@level@display@on}%
2217                \gdef\asreply@firstlevel@color{lightgray}%
2218                \gdef\asreply@secondlevel@color{lightgray}%
2219                \gdef\asreply@thirdlevel@color{askreplythirdcolor}%
2220              }%
2221              {}% level=none
2222            }%
2223          }%
2224        \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip]
2225          % Empty versus non-empty exercise title
2226          \iftoggle{assignpoints@checkemptystring}%
2227            {\strut\lightbf{\sffamily\exercisename\hfill{\small\askreply@editpoints}}}%
2228            {\strut\lightbf{\sffamily\currentexercisetitle\hfill{\small\askreply@editpoints}}}%
2229        \end{tcolorbox}\nopagebreak%
2230        \askreplybox%
```

54

```
2231        \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{askreplyfirstcolor}}%
2232          \small
2233    }{%
2234          \par\phantomtext%
2235          %\par\vspace{-0.5\baselineskip}%
2236        \endtikzpagelayer
2237        %\par\vspace{\baselineskip}%
2238      \endaskreplybox
2239      \vspace{\askreply@afterskip}%
2240      \togglefalse{assignpoints@checkemptystring}%
2241      \togglefalse{askreply@level@display@on}%
2242    }
2243    %
2244    %- Subexercise environment
2245    %-------------------------
2246    \AtBeginSubexercise{\begin{tcolorbox}[subexercisepoints]}
2247    \AtEndSubexercise{\end{tcolorbox}}
2248    \RenewDocumentEnvironment{subexercise}{ O{} }{%
2249      \pgfkeys{/askreply/.cd, #1}%
2250      \ifbool{assignpoints@insubexercise}%
2251        {\PackageError{assignpoints}{You cannot nest subexercise environments}}%
2252        {}%
2253      \ifbool{assignpoints@subexercise@layoutdefined}{}{%
2254        \PackageError{assignpoints}{Option `customlayout' requires you to define a subexercise
2255                                    layout using at least `\string\AtBeginSubexercise{...}'}
2256      }%
2257      \global\booltrue{assignpoints@insubexercise}%
2258      \setlength{\assignpoints@currentsubexercisepoints}{0pt}%
2259      \global\assignpoints@currentsubexercisepoints=\assignpoints@currentsubexercisepoints%
2260      \ifx\askreply@title\@empty
2261        \toggletrue{assignpoints@checkemptystring}%
2262      \else
2263        \togglefalse{assignpoints@checkemptystring}%
2264        \renewcommand{\currentsubexercisetitle}{\askreply@title}%
2265      \fi
2266      \stepcounter{assignpoints@subexercisecount}% Starting the numbering from "1"
2267      \exercisepoints@sub@begin%
2268      %\begin{tcolorbox}[subexercisepoints, #1]
2269    }{%
2270      %\end{tcolorbox}%
2271      \exercisepoints@sub@end%
2272      \assignpoints@storevaluetoaux%
2273        {\assignpointsprefix{subexercise}@title}%
2274        {\theassignpoints@exercisecount.\theassignpoints@subexercisecount}%
2275        {\currentsubexercisetitle}%
2276      \assignpoints@storevaluetoaux%
2277        {\assignpointsprefix{exercise}@points}%
2278        {\theassignpoints@exercisecount.\theassignpoints@subexercisecount}%
2279        {\strip@pt\assignpoints@currentsubexercisepoints}% https://tex.stackexchange.com/questions/2810/
2280      \global\boolfalse{assignpoints@insubexercise}%
2281      \togglefalse{assignpoints@checkemptystring}%
2282    }
2283    %
2284    %- Solution environment
2285    %----------------------
2286    \RenewDocumentEnvironment{solution}{  }{%
2287      \catcode`\^^M=\active
2288      \@ifnextchar[%
```

```
2289              {\catcode`\^^M=5 \solution@start}
2290              {\catcode`\^^M=5 \solution@start[]}
2291      }{%
2292        \endVerbatimOut%
2293        %\VerbatimInput{\askreply@outfilename}%
2294        \ifaskreply@display
2295          %\vspace{\askreply@beforeskip}%
2296          \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
2297                          colback=askreplysecondcolor!75!black, colframe=askreplysecondcolor]
2298            % Empty versus non-empty solution title
2299            \ifstrempty{\currentexercisetitle}%
2300              {\strut\lightbf{\sffamily\solutionname\space\theassignpoints@solutioncount}\space%
2301                  \hfill{\small(\exercisenamenocap\space\hyperlink{\exerciseID}{\thesolution},\space%
2302                  page\space\pageref{exercise:\thesolution})}%
2303              }%
2304              {\strut\lightbf{\sffamily\solutionname\space\theassignpoints@solutioncount}\space%
2305                  \enspace\textemdash\enspace\sffamily\currentexercisetitle\space%
2306                  \enspace{\small(page\space\pageref{exercise:\thesolution})}% }}%
2307                  \hfill{\small\normalfont\sffamily%
2308                    \displaypoints*[exercise]{\theassignpoints@solutioncount}}%
2309              }%
2310          \end{tcolorbox}\nopagebreak
2311          \askreplybox%
2312            \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{askreplysecondcolor}}%
2313              \input{\exercisesdir\jobname-solution-body-\askreplytwodigits{\thesolution}.ltx}
2314              \askreplynumberoflines{\input{\askreply@outfilename}}%
2315              %NoL: \theaskreplycountlines
2316              \ifnumequal{\theaskreplycountlines}{1}{\par\vspace{0.4\baselineskip}}{}%
2317              \par\phantomtext%
2318            \endtikzpagelayer
2319          \endaskreplybox
2320          \vspace{\askreply@afterskip}%
2321        \fi
2322        \ifaskreply@storing
2323          \askreply@filecopytoenv%
2324            {\exercisesdir\jobname-solution-body-\askreplytwodigits{\thesolution}.ltx}%
2325            {\exercisesdir\jobname-solution-\askreplytwodigits{\thesolution}.env}%
2326            {\string\begin{solution}}%
2327            {\string\end{solution}}%
2328            {\string[storing=false]}%
2329        \fi
2330        %\ifx\askreply@ID\empty%
2331          \askreply@storevaluetoaux{exercise@solutionID}{\thesolution}{ID:\thesolution}%
2332        %\else
2333        %  \askreply@storevaluetoaux{exercise@solutionID}{\askreply@ID}{ID:\askreply@ID}%
2334        %\fi
2335        \global\boolfalse{assignpoints@insolution}%
2336      }
2337      \def\solution@start[#1]{%
2338        \pgfkeys{/askreply/.cd, #1}%
2339        \ifbool{assignpoints@insolution}%
2340          {\PackageError{assignpoints}{You cannot nest solution environments}}%
2341          {}%
2342        \ifbool{assignpoints@solution@layoutdefined}{}{%
2343          \PackageError{assignpoints}%
2344            {Option `customlayout' requires you to define an solution layout using
2345            at least `\string\AtBeginSolution{...}'}%
2346        }%
```

```latex
2347        \global\booltrue{assignpoints@insolution}%
2348        \ifx\askreply@ID\empty%
2349          %\ifnumequal{\value{solution}}{\value{exercise}}%
2350          %  {\setcounter{solution}{\value{exercise}}}%
2351          %  {%
2352          %    \ifnumless{\value{solution}}{\value{exercise}}%
2353          %      {\setcounter{solution}{\value{exercise}}}%
2354          %      {\PackageWarning{askreply}{The solution counter must be set with ID}}%
2355          %  }%
2356          %\getenvID[exercise]{\thesolution}%
2357          \stepcounter{solution}%
2358          \getenvID[solution]{\thesolution}%
2359        \else
2360          %\getenvID[exercise]{\thesolution}%
2361          \setcounter{solution}{\askreply@ID}%
2362          \getenvID[solution]{\thesolution}%
2363        \fi
2364        \stepcounter{solutionnumber}%
2365        \hypersetup{unicode, pdfborder=0 0 0, linkcolor=white}%
2366        %\hypertarget{\solutionID}{}%
2367        \phantomsection\label{solution:\solutionID}%
2368        \ifx\askreply@envsymbol\@empty
2369          \renewcommand{\envsymbol}{\normalfont\faLightbulb}%
2370        \else
2371          \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2372        \fi
2373        \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2374        %\par\vspace{\baselineskip}
2375        \ifbool{assignpoints@inexercise}
2376          {\setcounter{assignpoints@solutioncount}{\theassignpoints@exercisecount}}%
2377          {\setcounter{assignpoints@solutioncount}{\thesolution}}
2378        %- Adding a "hard" solution reference (not a label but having the same functionality)
2379        %- The aim is to have control on the display if there is no reference
2380        \assignpoints@storevaluetoaux%
2381          {\assignpointsprefix{solution}@reference}%
2382          {\theassignpoints@solutioncount}%
2383          {\theassignpoints@solutioncount}%
2384        \gettitle[exercise]{\theassignpoints@solutioncount}%
2385        \def\askreply@outfilename{%
2386          \exercisesdir\jobname-solution-body-\askreplytwodigits{\thesolution}.ltx}%
2387        \VerbatimOut{\askreply@outfilename}%
2388      }
2389      \NewDocumentEnvironment{solution*}{ o }{% Solely (no reference) or demonstration exercise
2390        \pgfkeys{/askreply/.cd, #1}%
2391        \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2392        \ifx\askreply@title\@empty% WORKS!
2393          \toggletrue{assignpoints@checkemptystring}%
2394        \else
2395          \togglefalse{assignpoints@checkemptystring}%
2396          \renewcommand{\currentexercisetitle}{\askreply@title}%
2397        \fi
2398        \ifx\askreply@envsymbol\@empty
2399          \renewcommand{\envsymbol}{\normalfont\faLightbulb}%
2400        \else
2401          \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2402        \fi
2403        \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2404        \ifdefstring{\askreply@level}{basic}%
```

```
2405        {%
2406          \toggletrue{askreply@level@display@on}%
2407          \gdef\asreply@firstlevel@color{askreplythirdcolor}%
2408          \gdef\asreply@secondlevel@color{lightgray}%
2409          \gdef\asreply@thirdlevel@color{lightgray}%
2410        }%
2411        {\ifdefstring{\askreply@level}{intermediate}%
2412          {%
2413            \toggletrue{askreply@level@display@on}%
2414            \gdef\asreply@firstlevel@color{lightgray}%
2415            \gdef\asreply@secondlevel@color{askreplythirdcolor}%
2416            \gdef\asreply@thirdlevel@color{lightgray}%
2417          }%
2418          {\ifdefstring{\askreply@level}{advanced}%
2419            {%
2420              \toggletrue{askreply@level@display@on}%
2421              \gdef\asreply@firstlevel@color{lightgray}%
2422              \gdef\asreply@secondlevel@color{lightgray}%
2423              \gdef\asreply@thirdlevel@color{askreplythirdcolor}%
2424            }%
2425            {}% level=none
2426          }%
2427        }%
2428      \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
2429                        colback=askreplysecondcolor!75!black, colframe=askreplysecondcolor]
2430      %\begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip]
2431        % Empty versus non-empty exercise title
2432        \iftoggle{assignpoints@checkemptystring}%
2433          {\strut\lightbf{\solutionname\hfill{\small\askreply@editpoints}}}
2434          {\strut\lightbf{\currentexercisetitle\hfill{\small\askreply@editpoints}}}%
2435      \end{tcolorbox}\nopagebreak%
2436      \askreplybox%
2437        \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{askreplyfirstcolor}}%
2438        \small
2439  }{%
2440        \par\phantomtext%
2441        %\vspace{-.5\baselineskip}%
2442        \endtikzpagelayer
2443        %\par\vspace{\dimexpr.5\baselineskip\relax}%
2444      \endaskreplybox
2445      \vspace{\askreply@afterskip}%
2446      \togglefalse{assignpoints@checkemptystring}%
2447      \togglefalse{askreply@level@display@on}%
2448  }
2449  %- Subsolution environment
2450  %------------------------
2451  \AtBeginSubsolution{\begin{tcolorbox}[subsolutionpoints]}
2452  \AtEndSubsolution{\end{tcolorbox}}
2453  \RenewDocumentEnvironment{subsolution}{ O{} }{%
2454    \ifbool{assignpoints@insubsolution}%
2455      {\PackageError{assignpoints}{You cannot nest `subsolution' environments}}%
2456      {}%
2457    \ifbool{assignpoints@subsolution@layoutdefined}{}{%
2458      \PackageError{assignpoints}%
2459        {Option `customlayout' requires you to define an `subsolution' layout using
2460        at least `\string\AtBeginSubsolution{...}'}%
2461    }%
2462    \global\booltrue{assignpoints@insubsolution}%
```

```
2463        \stepcounter{assignpoints@subsolutioncount}%
2464        \gettitle[subexercise]{\theassignpoints@solutioncount.\theassignpoints@subsolutioncount}%
2465        \solutionpoints@subsolution@begin
2466        %\begin{tcolorbox}[subsolutionpoints, #1]
2467    }{%
2468        %\end{tcolorbox}%
2469        \solutionpoints@subsolution@end%
2470        \global\boolfalse{assignpoints@insubsolution}%
2471    }
2472    %- Quiz environment
2473    %-----------------
2474    \RenewDocumentEnvironment{quiz}{ }{%
2475        \catcode`\^^M=\active
2476        \@ifnextchar[%
2477        {\catcode`\^^M=5 \quiz@start}
2478        {\catcode`\^^M=5 \quiz@start[]}
2479    }{%
2480        \endVerbatimOut%
2481        %\VerbatimInput{\askreply@outfilename}%
2482        \ifaskreply@display
2483          \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
2484                            colupper=askreplysecondcolor, colback=black!15, colframe=black!50]
2485            % Empty versus given quiz title
2486            \iftoggle{assignpoints@checkemptystring}%
2487              {\strut\lightbf{\sffamily\quizname\space\currentquiznumber}%
2488                  \hfill{\small\normalfont\sffamily\displaypoints*[quiz]{\currentquiznumber}}}%
2489              }%
2490              {\strut\lightbf{\sffamily\quizname\space\currentquiznumber}%
2491                  \enspace\textemdash\enspace\sffamily\currentquiztitle%
2492                  \hfill{\small\normalfont\sffamily\displaypoints*[quiz]{\currentquiznumber}}}%
2493              }%
2494          \end{tcolorbox}\nopagebreak%
2495          \askreplybox%
2496          %\vspace{-.5\baselineskip}
2497          \tikzpagelayer{\@askreplytikzquizframebox{askreplyframedbox, fill=white, draw=black!50}}%
2498            \input{\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
2499            \askreplynumberoflines{% Not to count the points twice
2500              \let\pointsoriginal\points%
2501              \let\points\phantom%
2502              \input{\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
2503              \let\points\pointsoriginal
2504            }%
2505            %NoL: \theaskreplycountlines
2506            %\askreplynumberoflines{\input{\askreply@outfilename}}%
2507            \par\phantomtext%
2508            \ifnumgreater{\theaskreplycountlines}{1}{}{\par\vspace{-0.6\baselineskip}}%
2509          \endtikzpagelayer
2510          %\par\vspace{\dimexpr.5\baselineskip\relax}%
2511          \endaskreplybox
2512          \vspace{\askreply@afterskip}%
2513        \fi
2514        \ifaskreply@storing
2515          \ifx\askreply@title\empty%
2516            \askreply@filecopytoenv%
2517              {\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
2518              {\quizzesdir\jobname-quiz-\askreplytwodigits{\thequiz}.env}%
2519              {\string\begin{quiz}}%
2520              {\string\end{quiz}}%
```

```
2521          {\string[storing=false]]}%
2522       \else
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, title={\askreply@title}]]}%
2529       \fi
2530     \fi
2531     \assignpoints@storevaluetoaux%
2532       {\assignpointsprefix{quiz}@quiztitle}%
2533       {\theassignpoints@quizcount}%
2534       {\currentquiztitle}%
2535     \assignpoints@storevaluetoaux%
2536       {\assignpointsprefix{quiz}@points}%
2537       {\theassignpoints@quizcount}%
2538       {\strip@pt\assignpoints@currentquizpoints}% https://tex.stackexchange.com/questions/2810/
2539     \askreply@storevaluetoaux{quiz@quizID}{\thequiz}{ID:\thequiz}%
2540     %\askreply@storevaluetoaux{quiz@quiztitle}{\thequiz}{\currentquiztitle}%
2541     %\togglefalse{assignpoints@checkemptystring}%
2542     \global\boolfalse{assignpoints@inquiz}%
2543     \togglefalse{assignpoints@checkemptystring}%
2544     \ifaskreply@list
2545       \addcontentsline{loq}{quiz}{\protect\numberline{\thequiz}\currentquiztitle}%
2546     \fi
2547   }
2548   \def\quiz@start[#1]{%
2549     \pgfkeys{/askreply/.cd, #1}%
2550     \ifbool{assignpoints@inquiz}%
2551       {\PackageError{assignpoints}{You cannot nest quiz environments}}%
2552       {}%
2553     \ifbool{assignpoints@quiz@layoutdefined}{}{%
2554       \PackageError{assignpoints}%
2555         {Option `customlayout' requires you to define a quiz layout using
2556         at least `\string\AtBeginQuiz{...}'}%
2557     }%
2558     \global\booltrue{assignpoints@inquiz}%
2559     \stepcounter{quiz}%
2560     \getenvID[quiz]{\thequiz}%
2561     %\getenvID[answer]{\thequiz}%
2562     \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2563     \phantomsection\label{quiz:\thequiz}% To have correct \pageref link (see TeX.SX/49061)
2564     \setlength{\assignpoints@currentquizpoints}{0pt}%
2565     \global\assignpoints@currentquizpoints=\assignpoints@currentquizpoints%
2566     \ifx\askreply@title\@empty% WORKS!
2567       %\textbf{TRUE}
2568       \toggletrue{assignpoints@checkemptystring}%
2569     \else
2570       %\textbf{FALSE}
2571       \togglefalse{assignpoints@checkemptystring}%
2572       \renewcommand{\currentquiztitle}{\askreply@title}%
2573     \fi
2574     \stepcounter{assignpoints@quizcount}%
2575     \stepcounter{assignpoints@totalquizcount}%
2576     \ifcsname assignpoints@quiz@numberofquestions@\currentquiznumber\endcsname%
2577       \renewcommand{\numberofquestions}{%
2578         \assignpoints@readvaluefromaux{quiz}{numberofquestions@\currentquiznumber}}%
```

```latex
2579        \fi
2580        \ifx\askreply@envsymbol\@empty
2581          \renewcommand{\envsymbol}{\normalfont\faList}%
2582        \else
2583          \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2584        \fi
2585        \settowidth{\envsymbolwidth}{\large\envsymbol}%
2586        \def\askreply@outfilename{\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
2587        \VerbatimOut{\askreply@outfilename}%
2588      }
2589      \NewDocumentEnvironment{quiz*}{ o }{% Solely (no reference) or demonstration exercise
2590        \pgfkeys{/askreply/.cd, #1}%
2591        \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2592        \stepcounter{quizdemo}
2593        \ifx\askreply@title\@empty% WORKS!
2594          \toggletrue{assignpoints@checkemptystring}%
2595        \else
2596          \togglefalse{assignpoints@checkemptystring}%
2597          \renewcommand{\currentquiztitle}{\askreply@title}%
2598        \fi
2599        \ifx\askreply@envsymbol\@empty
2600          \renewcommand{\envsymbol}{\normalfont\faList}%
2601        \else
2602          \renewcommand{\envsymbol}{\normalfont\askreply@envsymbol}%
2603        \fi
2604        \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2605        \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
2606                        colupper=askreplysecondcolor, colback=black!15, colframe=black!50]
2607          % Empty versus non-empty quiz title
2608          \iftoggle{assignpoints@checkemptystring}%
2609            {\strut\lightbf{\sffamily\quizname\hfill{\small\askreply@editpoints}}}%
2610            {\strut\lightbf{\sffamily\quizname\space\@Alph{\thequizdemo}%
2611              \enspace\textemdash\enspace\currentquiztitle\hfill{\small\askreply@editpoints}}}%
2612        \end{tcolorbox}\nopagebreak%
2613        \askreplybox
2614        %\vspace{-.5\baselineskip}
2615        \tikzpagelayer{\@askreplytikzquizframebox{askreplyframedbox, fill=white, draw=black!50}}
2616          \small
2617      }{%
2618          \par\phantomtext%
2619          \endtikzpagelayer
2620          \par\vspace{\dimexpr.5\baselineskip\relax}%
2621        \endaskreplybox
2622        \vspace{\askreply@afterskip}%
2623        \togglefalse{assignpoints@checkemptystring}%
2624      }
2625      %- Quizquestion environment (multiple answers)
2626      %--------------------------------------------
2627      %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
2628      %          [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
2629      %          {#3} = Mandatory correct answer numbers comma separated
2630      %          {#4} = Mandatory wrong answer numbers comma separated
2631      %          {#5} = Optional title
2632      %          (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
2633      %          <#7> = Optional explanation text of the answer (usually given ;-)
2634      \RenewDocumentEnvironment{quizquestion}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
2635        {
2636          \stepcounter{quizquestion}%
```

```
2637        \label{quizquestion:\thequiz.\thequizquestion}%
2638        \ifbool{assignpoints@inquizquestion}%
2639          {\PackageError{assignpoints}{You cannot nest quizquestion environments}}%
2640          {}%
2641        \global\booltrue{assignpoints@inquizquestion}%
2642        \setlength{\assignpoints@currentquizquestionpoints}{0pt}%
2643        \global\assignpoints@currentquizquestionpoints=\assignpoints@currentquizquestionpoints%
2644        \renewcommand{\currentquizquestiontitle}{#5}%
2645        \ifstrempty{#5}%
2646          {\toggletrue{assignpoints@checkemptystring}}%
2647          {\togglefalse{assignpoints@checkemptystring}}%
2648        \stepcounter{assignpoints@quizquestioncount}%
2649        \let\mcqproposal\mcqproposalMultiple%
2650        \setcounter{mcqtrialnumber}{-1}%
2651        \begin{tcolorbox}[quizquestionpoints]
2652      }
2653      {
2654        \mcqverify{#3}{#4}\hspace{0.1\linewidth}%
2655        \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
2656          {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
2657          {\ifstrequal{#1}{margin}%
2658            {\mcqdisplayanswer[#2]{#7}(#6)}% Display answer in the margin
2659            {\ifstrequal{#1}{tooltip}%
2660              {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
2661              {\PackageWarning{askreply}%
2662                {Key `#1' is not recognised. It has been set as `tooltip'}%
2663                \mcqdisplayanswer*[#2]{#7}(#6)% Display as tooltip
2664              }
2665            }
2666          }%
2667        \hfill\mcqreset%
2668        \end{tcolorbox}%
2669        \assignpoints@storevaluetoaux%
2670          {\assignpointsprefix{quiz}@points}%
2671          {\theassignpoints@quizcount.\theassignpoints@quizquestioncount}%
2672          {\strip@pt\assignpoints@currentquizquestionpoints}%
2673        \askreply@storevaluetoaux{quiz@quizquestiontitle}%
2674          {\thequizquestion}{\currentquizquestiontitle}%
2675        \global\boolfalse{assignpoints@inquizquestion}%
2676        \togglefalse{assignpoints@checkemptystring}%
2677      }
2678    %- Quizquestion* environment (single exclusive answer)
2679    %-------------------------------------------------
2680    %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
2681    %          [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
2682    %          {#3} = Mandatory correct answer number (only one)
2683    %          {#4} = Mandatory wrong answer numbers comma separated
2684    %          {#5} = Optional title
2685    %          (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
2686    %          <#7> = Optional explanation text of the answer (usually given ;-)
2687    \NewDocumentEnvironment{quizquestion*}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
2688      {
2689        \stepcounter{quizquestion}%
2690        \label{quizquestion:\thequiz.\thequizquestion}%
2691        \ifbool{assignpoints@inquizquestion}%
2692          {\PackageError{assignpoints}{You cannot nest quizquestion environments}}%
2693          {}%
2694        \global\booltrue{assignpoints@inquizquestion}%
```

```latex
2695        \setlength{\assignpoints@currentquizquestionpoints}{0pt}%
2696        \global\assignpoints@currentquizquestionpoints=\assignpoints@currentquizquestionpoints%
2697        \renewcommand{\currentquizquestiontitle}{#5}%
2698        \ifstrempty{#5}%
2699          {\toggletrue{assignpoints@checkemptystring}}%
2700          {\togglefalse{assignpoints@checkemptystring}}%
2701        \stepcounter{assignpoints@quizquestioncount}%
2702        \let\mcqproposal\mcqproposalSingle%
2703        \setcounter{mcqtrialnumber}{-1}
2704        \begin{tcolorbox}[quizquestionpoints]
2705      }
2706      {
2707        \mcqverify{#3}{#4}\hspace{0.1\linewidth}%
2708        \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
2709          {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
2710          {\ifstrequal{#1}{margin}%
2711            {\mcqdisplayanswer[#2]{#7}(#6)} % Display answer in the margin
2712            {\ifstrequal{#1}{tooltip}%
2713              {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
2714              {\PackageWarning{askreply}%
2715                {Key\space `#1'\space is\space not\space recognised.\space
2716                It\space has\space been\space set\space as\space `tooltip'}%
2717              \mcqdisplayanswer*[#2]{#7}(#6)% Display as tooltip
2718              }
2719            }
2720          }%
2721        \hfill\mcqreset%
2722        \end{tcolorbox}%
2723        \assignpoints@storevaluetoaux%
2724          {\assignpointsprefix{quiz}@points}%
2725          {\theassignpoints@quizcount.\theassignpoints@quizquestioncount}%
2726          {\strip@pt\assignpoints@currentquizquestionpoints}%
2727        \askreply@storevaluetoaux{quiz@quizquestiontitle}%
2728          {\thequizquestion}{\currentquizquestiontitle}%
2729        \global\boolfalse{assignpoints@inquizquestion}%
2730        \togglefalse{assignpoints@checkemptystring}%
2731      }
2732   %- Quizquestion environment (multiple answers)
2733   %--------------------------------------------
2734   %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
2735   %          [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
2736   %          {#3} = Mandatory correct answer numbers comma separated
2737   %          {#4} = Mandatory wrong answer numbers comma separated
2738   %          {#5} = Optional title
2739   %          (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
2740   %          <#7> = Optional explanation text of the answer (usually given ;-)
2741   %- Quiz question demo environment (single exclusive answer)
2742   \NewDocumentEnvironment{mcqdemo}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
2743     {
2744        \stepcounter{mcqdemo}%
2745        \renewcommand{\currentquizquestiontitle}{#5}%
2746        \ifstrempty{#5}%
2747          {\toggletrue{assignpoints@checkemptystring}}%
2748          {\togglefalse{assignpoints@checkemptystring}}%
2749        \let\mcqproposal\mcqproposalMultipleDemo%
2750        \begin{tcolorbox}[mcqdemo]
2751     }
2752     {
```

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```latex
2753          \mcqverifydemo{#3}{#4}\hspace{0.1\linewidth}%
2754          \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
2755            {\mcqdisplayanswerdemo*[#2]{#7}(#6)}% Display as tooltip
2756            {\ifstrequal{#1}{margin}%
2757              {\mcqdisplayanswerdemo[#2]{#7}(#6)} % Display answer in the margin
2758              {\ifstrequal{#1}{tooltip}%
2759                {\mcqdisplayanswerdemo*[#2]{#7}(#6)}% Display as tooltip
2760                {\PackageWarning{askreply}%
2761                  {Key\space `#1'\space is\space not\space recognised.\space
2762                  It\space has\space been\space set\space as\space `tooltip'}%
2763                 \mcqdisplayanswerdemo*[#2]{#7}(#6)% Display as tooltip
2764                }
2765              }
2766            }%
2767          \hfill\mcqresetdemo%
2768          \end{tcolorbox}%
2769          \togglefalse{assignpoints@checkemptystring}%
2770        }
2771    %--------------------------------------------------------------
2772    %- Usage – <#1> = Optional way to display the answer, in the margin (default) or as tooltip
2773    %          [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
2774    %          {#3} = Mandatory correct answer number (only one)
2775    %          {#4} = Mandatory wrong answer numbers comma separated
2776    %          {#5} = Optional title
2777    %          (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
2778    %          <#7> = Optional explanation text of the answer (usually given ;-)
2779    \NewDocumentEnvironment{mcqdemo*}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
2780        {
2781          \stepcounter{mcqdemo}%
2782          \renewcommand{\currentquizquestiontitle}{#5}%
2783          \ifstrempty{#5}%
2784            {\toggletrue{assignpoints@checkemptystring}}%
2785            {\togglefalse{assignpoints@checkemptystring}}%
2786          \let\mcqproposal\mcqproposalSingleDemo%
2787          \begin{tcolorbox}[mcqdemo]
2788        }
2789        {
2790          \mcqverifydemo{#3}{#4}\hspace{0.1\linewidth}%
2791          \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
2792            {\mcqdisplayanswerdemo*[#2]{#7}(#6)}% Display as tooltip
2793            {\ifstrequal{#1}{margin}%
2794              {\mcqdisplayanswerdemo[#2]{#7}(#6)} % Display answer in the margin
2795              {\ifstrequal{#1}{tooltip}%
2796                {\mcqdisplayanswerdemo*[#2]{#7}(#6)}% Display as tooltip
2797                {\PackageWarning{askreply}%
2798                  {Key\space `#1'\space is\space not\space recognised.\space
2799                  It\space has\space been\space set\space as\space `tooltip'}%
2800                 \mcqdisplayanswerdemo*[#2]{#7}(#6)% Display as tooltip
2801                }
2802              }
2803            }%
2804          \hfill\mcqresetdemo%
2805          \end{tcolorbox}%
2806          \togglefalse{assignpoints@checkemptystring}%
2807        }
2808    }{% If `assignpoints` is not loaded, defining "exercises" and "quizzes" environments
2809      %- With the following, one is able to assign points, even if they are not displayed
2810      %- It can be useful to prepare exercises and solutions in a first step
```

```latex
     \let\points\vphantom
     \NewDocumentCommand{\itempoints}{ s m }{%
       \IfBooleanTF{#1}{\vphantom{#2}}{\vphantom{#2}}
     }
     \providecommand{\currentexercisetitle}{}
     \providecommand{\currentsubexercisetitle}{}
     \providecommand{\currentquiztitle}{}
     \providecommand{\currentquizquestiontitle}{}
     %
     %- Exercise environment
     %----------------------
     \NewDocumentEnvironment{exercise}{  }{%
       \catcode`\^^M=\active
       \@ifnextchar[%
         {\catcode`\^^M=5 \exercise@start}
         {\catcode`\^^M=5 \exercise@start[]}
     }{%
       \endVerbatimOut%
       \ifaskreply@display
         \ifdefstring{\askreply@level}{basic}{%
           \toggletrue{askreply@level@display@on}%
           \gdef\asreply@firstlevel@color{askreplythirdcolor}%
           \gdef\asreply@secondlevel@color{lightgray}%
           \gdef\asreply@thirdlevel@color{lightgray}%
         }{\ifdefstring{\askreply@level}{intermediate}{%
             \toggletrue{askreply@level@display@on}%
             \gdef\asreply@firstlevel@color{lightgray}%
             \gdef\asreply@secondlevel@color{askreplythirdcolor}%
             \gdef\asreply@thirdlevel@color{lightgray}%
           }{\ifdefstring{\askreply@level}{advanced}{%
               \toggletrue{askreply@level@display@on}%
               \gdef\asreply@firstlevel@color{lightgray}%
               \gdef\asreply@secondlevel@color{lightgray}%
               \gdef\asreply@thirdlevel@color{askreplythirdcolor}%
             }{}%level=none
           }%
         }%
       \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip]
         % Empty versus non-empty exercise title
         \ifdefempty{\currentexercisetitle}%
           {\strut\lightbf{\exercisename\space\theexercise}}%
           {\strut\lightbf{\exercisename\space\theexercise%
               \enspace\textemdash\enspace\currentexercisetitle}%
           }%
       \end{tcolorbox}\nopagebreak%
       \askreplybox
         \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{askreplyfirstcolor}}
           \input{\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}
           \par\phantomtext%
           \ifdefempty{\solutionID}%
             {\relax}%
             {\par\hfill\raisebox{-2.5pt}{%
                 \textcolor{askreplysecondcolor}{%
                   \itshape\footnotesize{\normalfont\faSquare}%
                     \enspace Solution\space page~\pageref{solution:\solutionID}%
             }}%
           }%
         \endtikzpagelayer
```

```
2869          \par\vspace{\dimexpr.5\baselineskip\relax}%
2870        \endaskreplybox
2871        \vspace{\askreply@afterskip}%
2872      \fi
2873      \ifaskreply@storing
2874        \ifx\askreply@title\empty%
2875          \askreply@filecopytoenv%
2876            {\askreply@outfilename}
2877            {\exercisesdir\jobname-exercise-\askreplytwodigits{\theexercise}.env}%
2878            {\string\begin{exercise}}%
2879            {\string\end{exercise}}%
2880            {\string[storing=false]}%
2881        \else
2882          \askreply@filecopytoenv%
2883            {\exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2884            {\exercisesdir\jobname-exercise-\askreplytwodigits{\theexercise}.env}%
2885            {\string\begin{exercise}}%
2886            {\string\end{exercise}}%
2887            {\string[storing=false, title=\askreply@title]}%
2888        \fi
2889      \fi
2890      \askreply@storevaluetoaux{exercise@exerciseID}{\theexercise}{ID:\theexercise}%
2891      \askreply@storevaluetoaux{exercise@exercisetitle}{\theexercise}{\currentexercisetitle}%
2892      \ifaskreply@list
2893        \addcontentsline{loe}{exercise}{\protect\numberline{\theexercise}\currentexercisetitle}%
2894      \fi
2895      \togglefalse{askreply@level@display@on}%
2896    }
2897    \def\exercise@start[#1]{%
2898      \pgfkeys{/askreply/.cd, #1}%
2899      \stepcounter{exercise}%
2900      \getenvID[exercise]{\theexercise}%
2901      \getenvID[solution]{\theexercise}%
2902      \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
2903      \phantomsection\label{exercise:\theexercise}% To have correct \pageref link (see TeX.SX/49061)
2904      \ifx\askreply@title\@empty% WORKS!
2905      \else
2906        \renewcommand{\currentexercisetitle}{\askreply@title}%
2907      \fi
2908      \renewcommand{\envsymbol}{%
2909        \normalfont\faIcon{laptop-code}}% \faIcon{feather-alt}} \faPenFancy \faMarker
2910      \settowidth{\envsymbolwidth}{\normalfont\large\envsymbol}%
2911      \def\askreply@outfilename{%
2912        \exercisesdir\jobname-exercise-body-\askreplytwodigits{\theexercise}.ltx}%
2913      \VerbatimOut{\askreply@outfilename}%
2914    }
2915    %- Subexercise environment
2916    %------------------------
2917    \NewDocumentEnvironment{subexercise}{ G{} }
2918      {\stepcounter{subexercise}%
2919       \renewcommand{\currentsubexercisetitle}{#1}
2920       \begin{tcolorbox}[subexercisenopoint]
2921      }{\end{tcolorbox}%
2922       \askreply@storevaluetoaux{exercise@subexercisetitle}%
2923         {\theexercise.\thesubexercise}{\currentsubexercisetitle}%
2924    }
2925    %
2926    %- Solution environment
```

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```latex
%----------------------
\NewDocumentEnvironment{solution}{   }{%
    \catcode`\^^M=\active
    \@ifnextchar[%
        {\catcode`\^^M=5 \solution@start}
        {\catcode`\^^M=5 \solution@start[]}
}{%
    \endVerbatimOut%
    \ifaskreply@display
      \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
                        colback=askreplysecondcolor!75!black, colframe=askreplysecondcolor]
        % Empty versus non-empty solution title
        \ifstrempty{\currentexercisetitle}%
          {\strut\lightbf{\solutionname\space\theassignpoints@solutioncount\space%
              \hfill{\small%
              (\exercisenamenocap\space\hyperlink{\exerciseID}{\thesolution},\space%
              page\space\pageref{exercise:\thesolution})}}%
          }%
          {\strut\lightbf{\solutionname\space\thesolution\space%
              \enspace\textemdash\enspace\currentexercisetitle\space%
              \enspace{\small(page\space\pageref{exercise:\thesolution})}}}%
          }%
      \end{tcolorbox}\nopagebreak
      \askreplybox
        \tikzpagelayer{\@askreplytikzframebox{askreplyframedbox, fill=black!6}{askreplyfirstcolor}}
          \input{\askreply@outfilename}
          \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}%
```

```
2985        \def\askreply@outfilename{%
2986          \exercisesdir\jobname-solution-body-\askreplytwodigits{\thesolution}.ltx}%
2987        \VerbatimOut{\askreply@outfilename}%
2988     }
2989     %- Subsolution environment
2990     %------------------------
2991     \NewDocumentEnvironment{subsolution}{ O{} }
2992        {\stepcounter{subsolution}%
2993         \getenvtitle[subexercise]{\thesolution.\thesubsolution}%
2994         \begin{tcolorbox}[subsolutionnopoint]
2995      }{\end{tcolorbox}}
2996     %- Quiz environment
2997     %-----------------
2998     \NewDocumentEnvironment{quiz}{ }{%
2999        \catcode`\^^M=\active
3000        \@ifnextchar[%
3001        {\catcode`\^^M=5 \quiz@start}
3002        {\catcode`\^^M=5 \quiz@start[]}
3003     }{%
3004        \endVerbatimOut%
3005        \ifaskreply@display
3006          \begin{tcolorbox}[askreplybackstageboxtitle, before skip=\askreply@beforeskip,
3007                            colupper=askreplysecondcolor, colback=black!15, colframe=black!50]
3008            % Empty versus non-empty exercise title
3009            \ifdefempty{\currentquiztitle}%
3010              {\strut\lightbf{\quizname\space\thequiz}}%
3011              {\strut\lightbf{\quizname\space\thequiz%
3012                  \enspace\textemdash\enspace\currentquiztitle}%
3013              }%
3014          \end{tcolorbox}\nopagebreak%
3015          \askreplybox
3016          %\vspace{-.5\baselineskip}
3017          \tikzpagelayer{\@askreplytikzquizframebox{askreplyframedbox, fill=white, draw=black!50}}
3018            \input{\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}
3019            \par\phantomtext%
3020            %\vspace{-.5\baselineskip}%
3021          \endtikzpagelayer
3022          \par\vspace{\dimexpr.5\baselineskip\relax}%
3023          \endaskreplybox
3024          \vspace{\askreply@afterskip}%
3025        \fi
3026        \ifaskreply@storing
3027          \ifx\askreply@title\empty%
3028            \askreply@filecopytoenv%
3029              {\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
3030              {\quizzesdir\jobname-quiz-\askreplytwodigits{\thequiz}.env}%
3031              {\string\begin{quiz}}%
3032              {\string\end{quiz}}%
3033              {\string[storing=false]}%
3034          \else
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, title={\askreply@title}]}%
3041          \fi
3042        \fi
```

```latex
3043        \askreply@storevaluetoaux{quiz@quizID}{\thequiz}{ID:\thequiz}%
3044        \askreply@storevaluetoaux{quiz@quiztitle}{\thequiz}{\currentquiztitle}%
3045        \ifaskreply@list
3046          \addcontentsline{loq}{quiz}{\protect\numberline{\thequiz}\currentquiztitle}%
3047        \fi
3048      }
3049    \def\quiz@start[#1]{%
3050        \pgfkeys{/askreply/.cd, #1}%
3051        \stepcounter{quiz}%
3052        \getenvID[quiz]{\thequiz}%
3053        \hypersetup{unicode, pdfborder=0 0 0, linkcolor=askreplyfirstcolor}%
3054        \phantomsection\label{quiz:\thequiz}% To have correct \pageref link (see TeX.SX/49061)
3055        \ifx\askreply@title\@empty% WORKS!
3056        \else
3057          \renewcommand{\currentquiztitle}{\askreply@title}%
3058        \fi
3059        \renewcommand{\envsymbol}{\normalfont\faList}%
3060        \settowidth{\envsymbolwidth}{\large\envsymbol}%
3061        \def\askreply@outfilename{\quizzesdir\jobname-quiz-body-\askreplytwodigits{\thequiz}.ltx}%
3062        \VerbatimOut{\askreply@outfilename}%
3063    }
3064    %- Quizquestion environment (multiple answers)
3065    %--------------------------------------------
3066    %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
3067    %          [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
3068    %          {#3} = Mandatory correct answer numbers comma separated
3069    %          {#4} = Mandatory wrong answer numbers comma separated
3070    %          {#5} = Optional title
3071    %          (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
3072    %          <#7> = Optional explanation text of the answer (usually given ;-)
3073    \NewDocumentEnvironment{quizquestion}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
3074      {
3075        \stepcounter{quizquestion}%
3076        \label{quizquestion:\thequiz.\thequizquestion}%
3077        \renewcommand{\currentquizquestiontitle}{#5}%
3078        \let\mcqproposal\mcqproposalMultiple%
3079        \begin{tcolorbox}[quizquestionnopoint]
3080      }
3081      {
3082        \mcqverify{#3}{#4}\hspace{0.1\linewidth}%
3083        \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
3084          {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
3085          {\ifstrequal{#1}{margin}%
3086            {\mcqdisplayanswer[#2]{#7}(#6)}% Display answer in the margin
3087            {\ifstrequal{#1}{tooltip}%
3088              {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
3089              {\PackageWarning{askreply}%
3090                {Key\space `#1'\space is\space not\space recognised.\space
3091                It\space has\space been\space set\space as\space `tooltip'}%
3092               \mcqdisplayanswer*[#2]{#7}(#6)% Display as tooltip
3093              }
3094            }
3095          }%
3096        \hfill\mcqreset%
3097        \end{tcolorbox}%
3098        \askreply@storevaluetoaux{quiz@quizquestiontitle}%
3099          {\thequizquestion}{\currentquizquestiontitle}%
3100      }
```

```
3101    %- Quizquestion* environment (single exclusive answer)
3102    %-----------------------------------------------------
3103    %- Usage - <#1> = Optional way to display the answer, in the margin (default) or as tooltip
3104    %         [#2] = Positionning the answer box: at [b] bottom (default), [c] centered or [t] top
3105    %         {#3} = Mandatory correct answer number (only one)
3106    %         {#4} = Mandatory wrong answer numbers comma separated
3107    %         {#5} = Optional title
3108    %         (#6) = Optional coordinates correction for positionning the answer (<dimx>,<dimy>)
3109    %         <#7> = Optional explanation text of the answer (usually given ;-)
3110    \NewDocumentEnvironment{quizquestion*}{ D<>{margin} O{b} m m G{} D(){6pt,12pt} D<>{} }%
3111      {
3112        \stepcounter{quizquestion}%
3113        \label{quizquestion:\thequiz.\thequizquestion}%
3114        \renewcommand{\currentquizquestiontitle}{#5}%
3115        \let\mcqproposal\mcqproposalSingle%
3116        \begin{tcolorbox}[quizquestionnopoint]
3117      }
3118      {
3119        \mcqverify{#3}{#4}\hspace{0.1\linewidth}%
3120        \ifdimless{\marginparwidth}{118pt}% 41 mm = 116.2204 pt / 42 mm = 119.0550 pt
3121          {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
3122          {\ifstrequal{#1}{margin}%
3123            {\mcqdisplayanswer[#2]{#7}(#6)} % Display answer in the margin
3124            {\ifstrequal{#1}{tooltip}%
3125              {\mcqdisplayanswer*[#2]{#7}(#6)}% Display as tooltip
3126              {\PackageWarning{askreply}%
3127                {Key\space `#1'\space is\space not\space recognised.\space
3128                 It\space has\space been\space set\space as\space `tooltip'}%
3129                \mcqdisplayanswer*[#2]{#7}(#6)% Display as tooltip
3130              }
3131            }
3132          }%
3133        \hfill\mcqreset%
3134        \end{tcolorbox}%
3135        \askreply@storevaluetoaux{quiz@quizquestiontitle}%
3136          {\thequizquestion}{\currentquizquestiontitle}%
3137      }
3138    }
3139    \endinput
```

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