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“Umumtexnik fanlar” kafedrası o’qituvchisi

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KIRISH

Zamonaviy axborot texnologiyalari asosida o’qitish va test tizimlarini sinovdan o’tkazish, yaratish va qo’llash, dasturiy ta’minot tizimlarining ma’lumotlar bazalari va bilim bazalarini ishlab chiqishning turli jihatlarini mahalliy va xorijiy olimlar Avanesov V.S., Bashmakova I.A., Bashmakova A.I., Vorobieva V.I.ning ishlarida ko’rib chiqilgan. , Gorbatova D.S., Zagvyazinskiy V.I., Kline P., Kurganskoy G.S., Minasova Sh.M., Pospelova D.A., Tretyakova P.I., Xovanova N.V., Chertovskiy V.D. va boshqalar. Ko’pgina mualliflar test tizimlarini tashkil etishning murakkabligini ta’kidlaydilar, chunki testni ishlab chiquvchilar asosiy e’tiborni sinov jarayonlarini avtomatlashtirish va uning natijalarini qayta ishlashga qaratadilar va asboblarni yaratishda test usullari va texnologiyalarini qo’llash, interfeyslarni loyihalash, turli xil dasturiy ta’minotni o’rnatish (shu jumladan tizimni to’ldirish formatlari). Bilimlarni nazorat qilish uchun kompyuterni o’qitish vositalarida juda cheklangan miqdordagi test topshiriqlaridan foydalanish (testlarda ko’p sonli turli xil test topshiriqlarining mavjudligi o’qitish sifatini va testning obyektivligini oshirishga, qurilishni amalga oshirishga imkon beradi. Moslashuvchan test tizimlari asosan sinovlarni qurish jarayonlarining yomon avtomatlashtirilganligi bilan bog’liq. Mavjud testlarning aksariyati yuqori darajada ixtisoslashgan bo’lib, test topshiriqlari to’plamiga o’zgartirish kiritish qiyin, bu esa o’quv tizimlarini tez o’zgaruvchan talablarga moslashtirish muammosini keltirib chiqaradi. Shu bilan birga, yangi texnologiyalarning paydo bo’lishi va jadal rivojlanishi tufayli ko’pincha testlarni (topshiriqlar to’plamini) yangilash kerak bo’ladi, masalan, axborot texnologiyalari va dasturlash sohasida. Shu sababli, texnik fanlar bo’yicha bilimlarni nazorat qilish uchun kompyuter testlarini qurishni avtomatlashtirish muammosi juda dolzarb ko’rinadi.

AVTOMATLASHTIRILGAN DASTURINI YARATISH

Test jarayonini avtomatlashtirish dasturini istalgan dasturlash tilida yaratish mumkin. Men bu dasturni hozirda juda imkoniyatlari keng, reytingi yuqori bo’lgan dasturlash tillaridan biri bo’lgan Python dasturlash tilida tuzib chiqdim.

Python dasturlash tili imkoniyatlari va qo’llanilish sohalari:

- Python dasturlash tilining keng miqyosda qo’llanilishi mumkin bo’lgan uch asosiy soha bor: veb-dasturlash (backend – vebserver uchun ilovalar yozish), sun’iy intellekt masalalari, kompyuterda foydalanuvchi juda ko’p marta bajaradigan mayda

ishlar (elektron xatlarni jo'natish, fayllarni izlash va bosmalash, elektron jadvaldan biror-bir ma'lumotlarni ajratib olish va xakozolar).

- Python o'rganish ancha oson bo'lgan dasturlash tilidir. Agar tabiiy tillar bilan o'xshatish qiladigan bo'lsak, biror-bir tilda fikrni yetkazish uchun ma'lum vaqt so'zlarni, tilning grammatikasi o'rganish kerak bo'ladi. Qandaydir minimal bilim shakllangandan so'ng, asta-sekin inson o'z fikrini ifoda eta boshlaydi. Dasturlash tillari bilan ham holat xuddi shunday. Biror dasturlash tilida amaliy foyda keltiradigan dastur yozishni boshlash uchun ma'lum bilimlar majmuini egallash kerak, shundan so'nggina dasturlashni boshlash mumkin. Boshqa dasturlash tillaridan farqli ravishda, Python da amaliy ahamiyatga ega dasturlarni ishlab chiqishga ancha ertaroq, hali tilning katta qismini o'rganmasdan turib ham kirishish mumkin.

- Python interpretatsiya qilinadigan dasturiy til. Dasturlash tillarini interpretatsiya qilinadigan va kompilyatsiya qilinadigan dasturlash tillariga bo'lishadi. Aniqroq aytganda, agar dasturlash tilidagi dasturni bajarish interpretatsiya orqali amalga oshirilsa, bunday tillar interpretatsiya qilanadigan til deyiladi. Agar dasturlash tilidagi dasturni bajarish uchun uni avval mashina tiliga o'tkazish talab qilinsa, bunday tillar kompilyatsiya qilinadigan tillar deyiladi. Aslini olganda, kompyuter uchun yozilgan har qanday dastur interpretatsiya qilinadi. Chunki mashina kodlaridagi dastur kompyuterning miyasi bo'lgan protsessor tomonidan interpretatsiya qilinadi. Interpretatsiya qilinadigan tillarda yozilgan dasturlar uchun maxsus – interpretator dastur mavjud. Bu interpretator dastur kodlarini bajarilishini ta'minlab beradi.

Kompyuterlarni avtomatlashtirish dasturi Python 3.11.2 versiyasida tuzilgan bo'lib, bu dasturni tuzish uchun tkinter deb nomlangan Python uchun standart GUI kutubxonasi kerak bo'ladi. Uning yordamida ish stoli ilovalarini yaratish mumkin. Bu bizning loyihamizning asosidir va biz undan dasturning foydalanuvchi interfeysini yaratish uchun foydalaniladi.

Qo'llanilgan uslubiyot va algoritm

Tasodifiy modul turli xil tarqatish uchun psevdotasodifiy sonlar generatorlarini amalga oshiradi. Ushbu modul bizga savollar variantlarini aralashtirishga yordam beradi.

So'rovlar kutubxonasi HTTP / 1.1 so'rovlarini juda oson yuborish imkonini beradi. Ochiq Trivia JB-dan savollar olish uchun bizga kutubxona kerak bo'ladi.

Python sinflari obyektlarni yaratish uchun rejadir. Obyektlar haqiqiy dunyodagi mavjudotlardir. Loyihani ishlab chiqish jarayonida biz turli xil funktsiyalarni turli sinflar va usullarga ajratiladi.

Kompyuter testlarini avtomatlashtirish dasturining ish jarayoni:

Dasturda savollarni json faylga lug'at ko'rinishda yozib chiqiladi (ochiq Trivia DB API-dan savollarni olsak ham bo'ladi).

Har bir olingan savol uchun biz savollar sinfidan foydalanib, boshqa obyekt yaratamiz. Bu savol obyektlarining barchasi question_bank ro'yxatga qo'shiladi. Bu

question_bank dastur miyasiga o'tadi, QuizBrain va quizobyekt yaratiladi. Ushbu sinf ko'proq savollar mavjudligini tekshirish, keyingi savolni olish, ballarni hisoblash va hokazolar uchun javobgardir. Ushbu quizobyekt QuizInterface sinfiga o'tkaziladi va foydalanuvchi u bilan o'zaro aloqada bo'lishi mumkin.

Bazadan (json fayldan yoki Open Trivia DB API-dan) savollarni olish. Savollarni olish uchun json faylning lug'atidan foydalanamiz(API-ga o'tiladi), toifalar va qiyinchiliklar bilan birga kerakli savollar sonini tanlanadi.

Savol turi bir nechta tanlov bo'lishi kerak va kodlash standart kodlash bo'lishi kerak. (API URL yaratish bosing va siz bir API URL olinadi: API URL namunasi: <https://opentdb.com/api.php?amount=10&type=multiple>)

Savollarni olish uchun requests moduldan foydalanamiz. Uni quyidagicha o'rnatamiz:

```
$ pip install requests
```

Yuqorida yaratilgan baza.py json fayldan foydalanib viktorina savollari va javoblarini olish uchun Python faylini yaratiladi.

```
import requests
```

```
import json
```

```
r=open('sample.json')
```

```
savol_data = json.load(r)
```

Shundan so'ng, ochiq Trivia DB API URL-dagi so'rovlar kutubxonasi yordamida GET so'rovini bajariladi. JSON javobining namunasi quyidagicha:

```
[
```

```
{
```

```
"savol": "Qurilish konstruksiyalari tayyorlangan materialiga ko'ra bo'linishlari.",
```

```
"togri_javob": "Metall, beton va temir-beton, tosh,yog'och va plasstmassa",
```

```
"notogri_javob": ["Tosh yog'och plasstmassa ", " Metall-beton va temir-beton"]},
```

```
{
```

```
"savol": "Konstruksiyalarni hisoblovchi dasturlarni belgilang",
```

```
"togri_javob": "Base,Lira",
```

```
"notogri_javob": ["Base Lira Avtocad 3dmax ", "Avtocad 3d max Photoshop "]},
```

```
{
```

"savol": "Base dasturining poydevor bo'limida gruntning hajmiy og'irligi qanday birlikda kiritiladi?",

```
"togri_javob": "ts/m3",
```

```
"notogri_javob": ["ts/m2 ", "kn/m2"]},
```

```
{
```

```
"savol": "Base dasturida fermalar qaysi materiallardan hisoblanadi?",
```

```
"togri_javob": "Metal,yog'och",
```

```
"notogri_javob": ["Metal, yog'och, plasstmassa ", "Metal,temir,beton,yog'och "]},
```

```
{
"savol": "Base dasturidagi fermalarga qo'yilgan kuchlar qanday birlikda?",
"togri_javob": "ts",
"notogri_javob": ["ts/m2 ", "ts/m3 "]},
{
"savol": " Base dasturidagi fermalar bo'limida necha xil tipavoy sxema mavjud?",
"togri_javob": " 4",
"notogri_javob": ["3 ", " 5 "]}
]
```

Savol model uch sifatleri bilan Python sinf, lekin hech narsa emas – question_text, correct_answer va choices.

```
class Savol:
def __init__(self, savol: str, correct_answer: str, choices: list):
self.savol_text = savol
self.correct_answer = correct_answer
self.choices = choices
```

Viktorina asosini qanday yaratish kerak?

Kalitlar fayli dasturning asosiy qismi. Endi kalitlar.py, fayl yaratamiz va u erda quyidagi kodni qo'shamiz:

```
import random
class QuizBrain:

def __init__(self, questions):
self.savol_no = 0
self.score = 0
self.questions = questions
self.current_savol = None
def has_more_questions(self):
return self.savol_no < len(self.questions)
def next_question(self):
self.current_savol = random.choice(self.questions)
self.savol_no += 1
q_text = self.current_savol.savol_text
return f"Savol {self.savol_no}: {q_text}"
def check_answer(self, user_answer):
correct_answer = self.current_savol.correct_answer
if user_answer.lower() == correct_answer.lower():
self.score += 1
return True
else:
```

```

return False
def get_score(self):
    wrong = self.savol_no - self.score
    score_percent = int(self.score / self.savol_no * 100)
    return (self.score, wrong, score_percent)

```

QuizBrain klassi savollarni, savollar ro'yxatini oladi. Bundan tashqari, savol_no va Skor atributlari 0 bilan boshlanadi va current_question dastlab None ga o'rnatiladi. Birinchi usul mavjud_more_questions () viktorinada ko'proq savollar bor yoki yo'qligini tekshiradi. Keyingi usul next_savol () savolni savollar ro'yxatidan index question_no-da oladi va keyin question_no atributini oshiradi va formatlangan savolni qaytaradi. Usul foydalanuvchi_javoblar argument sifatida qabul qilinadi va foydalaniladi javobning javobi yoki yo'qligi tekshiradi. Shuningdek, u balni saqlaydi va mantiqiy qiymatlarni qaytaradi. Oxirgi usul get_score() to'g'ri javoblar sonini, noto'g'ri javoblarni va ball foizini qaytaradi.

Ilovaning foydalanuvchi interfeysini yaratadigan keyingi qismga o'tamiz. korinish.py. Ushbu bo'limda uchun fayl yaratish, va quyidagi kodni kiritish.

```

from tkinter import Tk, Canvas, StringVar, Label, Radiobutton, Button,
messagebox
from kalitlar import QuizBrain
import random
import time
from datetime import timedelta
THEME_COLOR = "#000000"
start_time = time.monotonic()
class QuizInterface:
    def __init__(self, quiz_brain: QuizBrain) -> None:
        self.quiz = quiz_brain
        self.window = Tk()
        self.window.configure(bg='lightblue')
        self.window.title("Suxrob S")
        self.window.geometry("820x530")
        self.display_title()
        self.canvas = Canvas(width=800, height=250,bg="lightblue")
        self.savol_text = self.canvas.create_text(400, 125,
        text="Savollar",
        width=680,
        fill=THEME_COLOR,
        font=(
        'Times New Roman', 15,
        'bold')

```

```
)
self.canvas.grid(row=2, column=0, columnspan=2, pady=50)
self.display_question()
self.user_answer = StringVar()
self.opts = self.radio_buttons()
self.display_options()
self.feedback = Label(self.window, pady=10,
font=("Times New Roman", 15, "bold"))
self.feedback.place(x=300, y=380)
self.buttons()
self.window.mainloop()
def display_title(self):
title = Label(self.window, text="Test dasturi",
width=50, bg="Yellow", fg="red",
font=("Times New Roman", 20, "bold"))
title.place(x=0, y=2)
def display_question(self):
q_text = self.quiz.next_question()
self.canvas.itemconfig(self.savol_text, text=q_text)
def radio_buttons(self):
choice_list = []
y_pos = 220
while len(choice_list) < 3:
radio_btn = Radiobutton(self.window, text="",
variable=self.user_answer,
value="", font=("Times New Roman", 14),fg="#000000",bg="lightblue")
choice_list.append(radio_btn)
radio_btn.place(x=200, y=y_pos)
y_pos += 40
return choice_list
def display_options(self):
val = 0
self.user_answer.set(None)
for option in self.quiz.current_savol.choices:
self.opts[val]['text'] = option
self.opts[val]['value'] = option
val += 1
def next_btn(self):
if self.quiz.check_answer(self.user_answer.get()):
self.feedback["fg"] = "green"
```

```

self.feedback["text"] = 'To`g`ri kalit! \U0001F44D'
else:
self.feedback['fg'] = 'red'
self.feedback['text'] = ('\u274E Xato! \n'
f'To`g`ri javob: {self.quiz.current_savol.correct_answer}')
if self.quiz.has_more_questions():
self.display_question()
self.display_options()
else:
self.display_result()
self.window.destroy()
def buttons(self):
next_button =Button(self.window, text="Keyingi", command=self.next_btn,
width=10, bg="green", fg="white", bd=8, font=("Times New Roman", 16, "bold"))
next_button.place(x=150, y=460)
quit_button=Button(self.window, text="Chiqish", bd=8,
command=self.window.destroy,
width=9, bg="red", fg="white", font=("Times New Roman", 16, " bold"))
quit_button.place(x=600, y=460)
def display_result(self):
correct, wrong, score_percent = self.quiz.get_score()
correct = f'To'g'ri javoblar: {correct}"
wrong = f'Noto'gri javoblar: {wrong}"
result = f'Natija: {score_percent}%"
end_time = time.monotonic()
a=int(end_time - start_time)
messagebox.showinfo("Result", f"{result}\n{correct}\n{wrong}\nVaqt={a}")

```

Yuqoridagi kodda biz konstruktor bilan QuizInterface sinfini yaratdik. Pythonda `__init__()` bu usul konstruktor deb ataladi va shu sinf obyektini yaratilganda avtomatik ravishda chaqiriladi.

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