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«SCIENCE AND PRACTICE: A NEW LEVEL OF INTEGRATION
IN THE MODERN WORLD»

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Research Article

MATLAB SYSTEM

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Abstract

The article provides information about the Matlab system.

Key words: Matlab, MATrix LABoratory, mathematics, visual programming, m-file.

Hozirgi vaqtda ko'plab matematik paketlar yaratilgan va ulardan keng foydalanilmoqda. Ulardan eng ko'p tarqalganlari – bu **Maple, Matlab, Derive, Eureka, Matematika, Maple** paketlari hisoblanadi. Bu paketlar ko'p funksional paketlar hisoblanadi.

Bugungi kunda matematik paketlarning o'quv jarayonidagi o'rni va roli ancha sezilarli va samaraliroqdir. Talabalarda matematik paketlardan foydalanish ko'nikmalari va malakalarini shakllantirish informatika fanining asosiy komponentalaridan biridir. Murakkab matematik masalalarni yechishni osonlashtirish orqali matematikani o'rganishda asabiy siqilishni oldini oladi hamda uni qiziqarli va juda oddiy jarayonga aylantiradi. Matematik hisoblashlarni avtomatlashtirish tizimlari orasida «MATLAB» paketi muhim o'ringa ega.

MATLAB – bu vaqt sinovidan o'tgan matematik hisoblarni avtomatlashtirish tizimlaridan biridir. U matritsaviy amallarni qo'llashga asoslangan tizimning nomi MATrix LABoratory matritsaviy laboratoriyada o'z aksini topgan. Matritsalar murakkab matematik hisoblarda, jumladan, chiziqli algebra masalalarini yechishda va dinamik tizimlar hamda ob'ektlarni modellashtirishda keng qo'llaniladi. Ular dinamik tizimlar va ob'ektlarning holat tenglamalarini avtomatik ravishda tuzish va yechishning asosi bo'lib hisoblanadi. Bunga MATLABning kengaytmasi Simulink misol bo'lishi mumkin.

MATLAB ixtisoslashtirilgan matritsaviy tizim chegaralaridan chiqib universal integrallashgan kompyuterda modellashtirish tizimiga aylandi. «Integrallashgan» so'zi bu tizimda qulay ifodalar va izohlar tahrirchisi, hisoblagich, grafik dasturiy protsessor va boshqalar o'zaro birlashtirilganligini bildiradi. MATLAB tizimining vazifasi har xil turdagi masalalarni yechishda foydalanuvchilarni an'anaviy dasturlash tillariga nisbatan afzalliklarga ega bo'lgan va imkoniyatlari keng dasturlash tili bilan ta'minlashdir. Uning dasturlash tillari bilan integrallashuvi dasturning kengayuvchanligiga olib keldi. MATLAB asosan matematik hisoblashlar, algoritmlarni yaratish, modellashtirish, ma'lumotlarni tahlil qilish, tadqiq qilish va vizuallashtirish, ilmiy va injenerlik grafikasi, ilovalarni ishlab chiqish va boshqalar.

MATLAB kengayuvchi tizim, uni har xil turdagi masalalarni yechishga oson moslashtirish mumkin. Uning eng katta afzalligi tabiiy yo'l bilan kengayishi va bu kengayish m-fayllar ko'rinishida amalga oshirishidir. Boshqacha aytganda, tizimning kengayishlari kompyuterning doimiy xotirasida saqlanadi va MATLABning birlashtirilgan (ichki) funksiyalari va protseduralari kabi kerakli vaqtida foydalanish uchun chaqiriladi. Foydalanuvchi m-fayl matnli formatga ega bo'lganligi sababli unga har qanday yangi buyruqni, operatorni yoki funksiyani kiritishi va keyin undan birlashtirilgan funksiya yoki operator kabi foydalanishi mumkin. MATLAB da yangi yaratilgan funksiya yoki prosedura fayl ko'rinishida diskda saqlanishi sababli operator va funksiyalar soni amalda chegaralanmagan. MATLAB ko'plab amaliy masalalarni yechish imkoniyatini beruvchi operatorlar va funksiyalarga ega. Ular yordamida ko'plab amaliy

masalalarni yechish mumkin. MATLAB tizimining tili matematik hisoblashlarni dasturlash sohasida har qanday mavjud yuqori darajadagi universal dasturlash tillaridan boyroqdir. U hozirgi vaqtda mavjud bo'lgan deyarli hamma dasturlash vositalarini amalga oshiradi, jumladan, ob'ektga mo'ljallangan va vizual dasturlashni (Simulink vositalari yordamida) ham. Umuman olganda, MATLAB tizimidan foydalanish tajribali dasturlovchilar uchun o'z fikrlari va g'oyalarini amalga oshirish uchun cheksiz imkoniyatlar beradi.

Matlab dasturlash tili yoki Matlab tili – ma'lumotlarni matritsa ko'rinishida berilishi, hisoblash imkoniyatlari va grafik vositalarining kengligi nuqtai nazaridan olganda, yuqori darajali algoritmik til hisoblanadi. Shu o'rinda, Matlab tili faqat Matlab muhitida dasturlar yaratish va ishlatish uchun xizmat qiladi. Foydalanuvchilarni Matlabda yaratiladigan barcha dasturlari diskda saqlanadi va m kengaytmaga ega, shu sababli ular **m-fayllar** deyiladi. m-fayllar ikki turga bo'linadi: function va script m-fayllardir.

m -fayllar yaratishda Matlab tilining quyidagi qoidalariga amal qilinishi lozim: o'zgaruvchilar e'lon qilinmaydi, metkalar ishlatilmaydi, shartsiz o'tish operatori go to ishlatilmaydi, dastur tugallanganligi qayd qilinmaydi.

M-fayllar bilan ishlash quyidagilarni o'z ichiga oladi:

- Asosiy (script-fayl) va qism dastur (function-fayl)larni ishlab chiqish;
- Matlabda M-fayllarni yaratish, tahrirlash va saqlash;
- M-fayllarni ishga tushirish;
- M-fayllarni sozlash.

MATLAB tizimining tili matematik hisoblashlarni dasturlash sohasida har qanday mavjud yuqori darajadagi universal dasturlash tillaridan boyroqdir. U hozirgi vaqtda mavjud bo'lgan deyarli hamma dasturlash vositalarini amalga oshiradi, jumladan, ob'ektga-mo'ljallangan va vizual dasturlashni ham. Umuman olganda, MATLAB tizimidan foydalanish tajribali dasturlovchilar uchun o'z fikrlari va o'ylarini amalga oshirish uchun cheksiz imkoniyatlar beradi.

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