PASKAL TILIDA TARMOQLANUVCHI JARAYONLARNI DASTURLASH

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Ko'pgina masalalarni yechishda ba'zi bir jarayonlar ma'lum shart yoki shartlarning qo'yilishiga nisbatan bajariladi. Bunday jarayonlar tarmoqlanuvchi jarayonlar deb yuritiladi.

Tarmoqlanuvchi hisoblash jarayonlari oddiy va murakkab bo'lishi mumkin. Bu esa jarayondagi tarmoqlar soniga bog'liq. Ma'lum bir tarmoqlanuvchi jarayon tarkibida yana tarmoqlanishlar bo'lishi mumkin. Bunday tarmoqlanishlari bor bo'lgan hisoblash jarayonlari murakkab tarmoqlanuvchi hisoblash jarayonlari deb ataladi.

Paskal tilida tarmoqlanuvchi jarayonlarni dasturlash uchun shartsiz, shartli o'tish va tanlash operatorlaridan foydalaniladi.

I. Shartsiz o'tish operatori

Dasturda ba'zi bir hollarda boshqaruvni to'g'ridan-to'g'ri biron-bir operatorga uzatishga, ya'ni dasturning bajarilish ketma-ketligini buzishga to'g'ri keladi. Bu jarayon shartsiz o'tish operatori yordamida bajariladi. Shartsiz o'tish operatorining umumiy ko'rinishi quyidagicha:

GOTO ‹ operator belgisi›;

Bu erda operator belgisi boshqaruv uzatiladigan operator belgisidir. Belgi sifatida 0-9999 oraliqdagi natural sonlar va CHAR turidagi belgilar ishlatiladi.

Belgi tavsiflash bo'limining LABEL bo'limida albatta tavsiflangan bo'lishi shart.

Misol: GOTO 32;

25: WRITE('y=',Y);

II. Shartli o'tish operatori

Dasturda boshqaruvni ma'lum shart asosida u yoki bu tarmoqqa uzatish shartli o'tish operatori yordamida amalga oshiriladi. Shartli o'tish operatori ikki xil ko'rinishda ishlatilishi mumkin: to'liq va qisqa.

Shartli o'tish operatorining to'liq ko'rinishi:

IF ‹mantiqiy ifoda›THEN S1 ELSE S2;

Bu erda IF (agar), THEN (u holda) va ELSE (aks holda) degan xizmatchi so'zlar, S1 va S2 ixtiyoriy operatorlar.

Operatordagi mantiqiy ifoda boshqaruvni uzatish shartini belgilaydi.

Operatorning ishlash tartibi quyidagicha: Agar keltirilgan mantiqiy ifoda TRUE (rost) qiymatni qabul qilsa, ya'ni qo'yilgan shart bajarilsa, THEN - xizmatchi so'zidan keyingi operator bajariladi, aks holda ELSE xizmatchi so'zdan keyingi operator bajariladi.

Mantiqiy ifodalarda munosabat amallari, mantiqiy amallar ishlatilishi mumkin.

Masalan, A>5, A=B, X<1.5 va h.k.

Shartlar oddiy va murakkab bo'lishi mumkin. Agar mantiqiy ifodada bitta munosabat amali berilgan bo'lsa, «oddiy shart» ni ifodalaydi.

Kattaliklar orasidagi shartlar HAM, YOKI, EMAS (Paskal tilida AND, OR, NOT) mantiq amallari belgilari orqali bog'lanuvchi bir necha munosabatlardan iborat bo'lsa „murakkab shartlar" deb ataladi.

Masalan, Matematik yozilishi Algoritmik tilda yozilishi

1) 2<=X< 5 (X>=2) AND(X< 5)

AND amalining natijasi uning ikkala argumenti ham rost bo'lsa rost bo'ladi.

OR amalining natijasi rost bo'lishi uchun argumentlardan birining rost bo'lishi etarli.

NOT amalining natijasi argumentning inkor qiymatiga teng, ya'ni argument rost bo'lsa - natija yolg'on, argument yolg'on bo'lsa - natija rost bo'ladi.

Masalan:

(4 < 5) AND (5 < 100) - mantiqiy ifoda TRUE (rost),

(SIN(X) > 1) AND (5 DIV 2=0) ifoda FALSE (yolg'on) qiymatga teng.

Shuni ta'kidlab o'tish kerakki, agar mantiqiy ifodalar, biz yuqorida aytganimizdek, mantiqiy amallar yordamida (AND, OR, NOT) murakkab ko'rinishga ega bo'lsa, ular qavslarga olib yoziladi.

Shartli o'tish operatorining ishlatilishini misollarda ko'rib chiqamiz.

1) IF x>0 THEN y:=SQRT(x) ELSE z:= sqr(x);

Operatorning bajarilishi natijasida x>0 bo'lsa, u holda y:= sqrt(x) operatori, aks holda z:= sqr(x) operatori bajariladi.

Ayrim algoritmlarda ba'zan shunday xol uchrashi mumkinki, bunda hisoblash jarayonida ayrim amallar ba'zi bir shartlar bajarilgandagina hisoblanadi, aks holda, hech qanday amal bajarilmaydi. Bu holda shartli o'tish operatorini qisqa ko'rinishda ifodalash mumkin.

IF ‹mantiqiy ifoda› THEN ‹operator›;

Misol:

IF X<1 THEN Y:=sqr(X);

Shartli o'tishda operator o'rnida, o'z navbatida, yana shartli o'tish operatorining to'la va qisqa ko'rinishlari ishlatilishi mumkin. Masalan:

1) IF B1 THEN IF B2 THEN A;

Bu erda B1,B2 - mantiqiy ifoda, A - operator.

Bu operatorning bajarilishi natijasida B1 mantiqiy ifoda tekshiriladi, agar TRUE qiymat qabul qilsa, B2 mantiqiy ifoda tekshiriladi, u ham rost bo'lsa (TRUE), A operator bajariladi.

Agar B1 yoki B2 mantiqiy ifodalar yolg'on bo'lsa (FALSE), shartli o'tish operatoridan keyingi operator bajariladi.

Agar shartli o'tish operatorida THEN yoki ELSE dan keyin bir necha operator guruhi bajarilsa, ular tarkibiy operator ko'rinishida yozilishi kerak, ya'ni operatorlar qavsi - BEGIN va END lar orasida yoziladi.

III. Tanlash operatori

Juda ko'p tarmoqlanish jarayonlarida tarmoqlanish ikki yoki undan ortiq tarmoqqa ajraladi. Umuman olganda, buni bizga tanish shartli o'tish operatori yordamida amalga oshirish mumkin:

IF B1 THEN A1 ELSE
IF B2 THEN A2 ELSE
IF BK THEN AK ;

Lekin bu hollarda shartli o'tish operatorlarining yozilishi noqulay.

Ko'p hollarda dasturchi uchun shartli operatorning umumiylashgan ko'rinishi - tanlash (variant) operatorini ishlatish qulay.

Tanlash operatorining metaformulasi quyidagicha yoziladi:

‹ tanlash operatori›::= CASE ‹operator selektori› OF ‹ tanlash ruyxati elementi›; END

bunda:

Tanlash operatorining umumiy ko'rinishi:

CASE S OF
M1 : A1;
M2: A2;
Mp: An
END;

Bu erda CASE (tanlash) -xizmatchi so'z, OF (dan), S - selektor, Mi– operatorlar belgilari, Ai -operatorlar (i=1 dan n gacha).

CASE operatori tarmoqlanish jarayonini berilgan bir necha operatordan birini tanlash yo'li bilan amalga oshiradi. Tanlash operatorida barcha operatorlar, shu jumladan bajarilishi uchun tanlangan operator ham aniq ravishda keltiriladi (berilgan operatorlar ketma-ketligi chegaralangan).

Bajarilishi kerak bo'lgan operator yoki operatorlar ketma-ketligi operator selektorining qiymatiga ko'ra aniqlanadi. Operator selektori sifatida haqiqiy bo'lmagan, skalyar ko'rinishdagi har qanday ifoda yoki o'zgaruvchi ishlatilishi mumkin.

Operatorning ishlashida uning tarkibidagi har bir operator tanlash belgisi deb ataluvchi belgi bilan ta'minlanadi. Bu belgi operatorning bajarilishi uchun zarur bo'lgan selektorning maxsus qiymatini qabul qiladigan selektorning tavsifiga mos konstantadir. Operator bir necha mavjud qiymatlar bilan ishlashi uchun, unda tanlash belgilari ro'yxati keltirilishi kerak.

Tanlash operatoridagi belgili operatorlar oddiy belgiga ham ega bo'lishlari mumkin. Bu holda oldin tanlash belgilari, so'ngra oddiy belgilar yoziladi.

Shuni ham inobatga olish lozimki, tanlash operatoriga faqat CASE xizmatchi so'z orqali kirish mumkin, ya'ni tanlash operatoridan tashqaridagi o'tish operatori orqali bu operatorga murojaat qilish mumkin emas.

Tanlash operatorining bajarilishi uning tarkibidagi operatorlar ketma-ketligidagi bitta operatorning bajarilishiga olib keladi. Shuning uchun ularning biridan biriga GOTO operatori yordamida o'tish xato demakdir.

Shartli o'tish operatorining quyidagi

IF B THEN Al ELSE A2

ko'rinishi tanlash operatorining quyidagi ko'rinishiga ekvivalentdir:

CASE B OF

TRUE: Al;

FALSE:A2;

END;

qisqa ko'rinishdagi shartli o'tish operatorining IF B THEN A ko'rinishi tanlash operatorining quyidagi ko'rinishga ekvivalentdir:

CASE B OF

TRUE: A;

FALSE

END;

Misol:

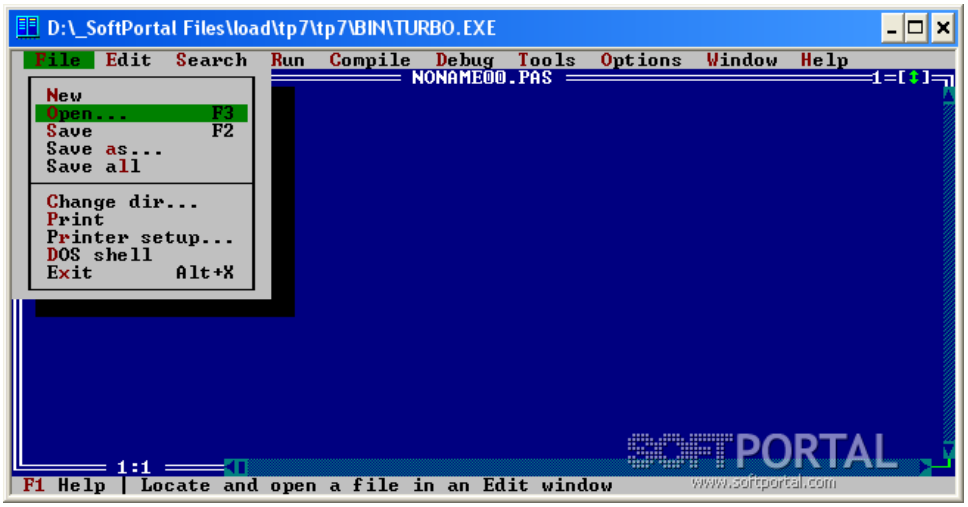
CASE T OF

'*','/': R:=l;

'+','-': R:=2

End;

Bu operatorning bajarilishi natijasida, agar T-belgili o'zga ruvchi "+" yoki "-" belgi qiymatlarni qabul qilsa, R o'zgaruvchi 2 qiymatni, agar T o'zgaruvchi "*" yoki"/" belgini qabul qilsa, R o'zgaruvchi 1 qiymatni qabul qiladi.



Misollar.

1) Ikkita son berilgan bo'lsin. Agar birinchi son absolyut qiymat jihatidan ikkinchi sondan katta bo'lsa, u holda birinchi sonni besh marta kamaytirish, aks holda sonlarni o'zgarishsiz qoldirish dasturi tuzilsin.

Program misol;

Var x,y; real;

Begin

Read(x,y);

If abs(x) › abs (y) then x:=x / 5;

Write (x,y)

End.

2) Agar temperatura T 30^0 dan oshib ketsa, u holda bosim P $10T^2$ ga , 30^0 dan kamayib ketsa, u holda $15 T^3$ ga,30^0 ga teng bo'lsa u holda bosim $10 T^3 + \sin^2 T$ ga teng bo'ladi. Shunday holatni ifodalovchi dastur tuzish.

```
Program temp;
Var P,T: real;
Begin
Read(T);
If T>30 then P:= 10*sqr(T) ;
If T<30 then P:= 15* exp(3*ln(T)) else P:=10* exp(3*ln(T)) +sqr(sin( T));
Write ('P= ', P)
End.
```

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