

EUROPEAN PATENT OFFICE
U.S. PATENT AND TRADEMARK OFFICE

CPC NOTICE OF CHANGES 1127

DATE: AUGUST 1, 2021

PROJECT MP0502

The following classification changes will be effected by this Notice of Changes:

<u>Action</u>	<u>Subclass</u>	<u>Group(s)</u>
SCHEME:		
Titles Changed:	G06F	5/00, 5/06, 5/16
	G06F	7/02, 7/06, 7/40, 7/483, 7/50, 7/501, 7/505, 7/57, 7/76
Notes Deleted:	G06F	7/499
DEFINITIONS:		
Definitions Deleted:	G06F	5/065
Definitions Modified:	G06F	3/14, 3/1423
	G06F	5/00, 5/06, 5/10, 5/16
	G06F	7/00, 7/02, 7/026, 7/22, 7/72, 7/76, 7/78

This Notice of Changes includes the following [Check the ones included]:

1. CLASSIFICATION SCHEME CHANGES

- A. New, Modified or Deleted Group(s)
- B. New, Modified or Deleted Warning(s)
- C. New, Modified or Deleted Note(s)
- D. New, Modified or Deleted Guidance Heading(s)

2. DEFINITIONS

- A. New or Modified Definitions (Full definition template)
- B. Modified or Deleted Definitions (Definitions Quick Fix)

3. REVISION CONCORDANCE LIST (RCL)

4. CHANGES TO THE CPC-TO-IPC CONCORDANCE LIST (CICL)

5. CHANGES TO

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1. CLASSIFICATION SCHEME CHANGES

A. New, Modified or Deleted Group(s)**SUBCLASS G06F - ELECTRIC DIGITAL DATA PROCESSING (computer systems based on specific computational models G06N)**

<u>Type*</u>	<u>Symbol</u>	<u>Indent Level Number of dots (e.g. 0, 1, 2)</u>	<u>Title</u> <u>“CPC only” text should normally be enclosed in {curly brackets}**</u>	<u>Transferred to#</u>
M	G06F5/00	0	Methods or arrangements for data conversion without changing the order or content of the data handled	
M	G06F5/06	1	for changing the speed of data flow, i.e. speed regularising {or timing, e.g. delay lines, FIFO buffers; over- or underrun control therefor (G06F 7/78 takes precedence)}	
M	G06F5/16	2	Multiplexed systems, i.e. using two or more similar devices which are alternately accessed for enqueue and dequeue operations, e.g. ping-pong buffers	
M	G06F7/02	1	Comparing digital values (G06F 7/06, {G06F7/22,} G06F 7/38 take precedence)	
M	G06F7/06	1	Arrangements for sorting, selecting, merging, or comparing data on individual record carriers	
M	G06F7/40	2	using contact-making devices, e.g. electromagnetic relay (G06F 7/46 takes precedence)	
M	G06F7/483	3	Computations with numbers represented by a non-linear combination of denominational numbers, e.g. rational numbers, logarithmic number system or floating-point numbers { (G06F7/4806, G06F7/4824, G06F7/49, G06F7/491, G06F7/544 take precedence)}	
M	G06F7/50	3	Adding; Subtracting (G06F 7/483 - G06F 7/491, G06F 7/544 - G06F 7/556 take precedence)	
M	G06F7/501	4	Half or full adders, i.e. basic adder cells for one denomination	
M	G06F7/505	4	in bit-parallel fashion, i.e. having a different digit-handling circuit for each denomination	
M	G06F7/57	3	Arithmetic logic units [ALU], i.e. arrangements or devices for performing two or more of the operations covered by groups G06F 7/483 – G06F 7/556 or for performing logical operations {(G06F7/49, G06F7/491 take precedence)}	

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<u>Type*</u>	<u>Symbol</u>	<u>Indent Level Number of dots (e.g. 0, 1, 2)</u>	<u>Title</u> <u>“CPC only” text should normally be enclosed in {curly brackets}**</u>	<u>Transferred to#</u>
M	G06F7/76	1	Arrangements for rearranging, permuting or selecting data according to predetermined rules, independently of the content of the data	

*N = new entries where reclassification into entries is involved; C = entries with modified file scope where reclassification of documents from the entries is involved; Q = new entries which are firstly populated with documents via administrative transfers from deleted (D) entries. Afterwards, the transferred documents into the Q entry will either stay or be moved to more appropriate entries, as determined by intellectual reclassification; T= existing entries with enlarged file scope, which receive documents from C or D entries, e.g. when a limiting reference is removed from the entry title; M = entries with no change to the file scope (no reclassification); D = deleted entries; F = frozen entries will be deleted once reclassification of documents from the entries is completed; U = entries that are unchanged.

NOTES:

- **No {curly brackets} are used for titles in CPC only subclasses, e.g. C12Y, A23Y; 2000 series symbol titles of groups found at the end of schemes (orthogonal codes); or the Y section titles. The {curly brackets} are used for 2000 series symbol titles found interspersed throughout the main trunk schemes (breakdown codes).
- U groups: it is obligatory to display the required “anchor” symbol (U group), i.e. the entry immediately preceding a new group or an array of new groups to be created (in case new groups are not clearly subgroups of C-type groups). Always include the symbol, indent level and title of the U group in the table above.
- All entry types should be included in the scheme changes table above for better understanding of the overall scheme change picture. Symbol, indent level, and title are required for all types.
- “Transferred to” column must be completed for all C, D, F, and Q type entries. F groups will be deleted once reclassification is completed.
- When multiple symbols are included in the “Transferred to” column, avoid using ranges of symbols in order to be as precise as possible.
- For administrative transfer of documents, the following text should be used: “< administrative transfer to XX>”, “<administrative transfer to XX and YY simultaneously>”, or “<administrative transfer to XX, YY ...and ZZ simultaneously>” when administrative transfer of the same documents is to more than one place.
- Administrative transfer to main trunk groups is assumed to be the source allocation type, unless otherwise indicated.
- Administrative transfer to 2000/Y series groups is assumed to be “additional information”.
- If needed, instructions for allocation type should be indicated within the angle brackets using the abbreviations “ADD” or “INV”: <administrative transfer to XX ADD> , <administrative transfer to XX INV>, or < administrative transfer to XX ADD, YY INV, ... and ZZ ADD simultaneously>.
- In certain situations, the “D” entries of 2000-series or Y-series groups may not require a destination (“Transferred to”) symbol, however it is required to specify “<no transfer>” in the “Transferred to” column for such cases.
- For finalisation projects, the deleted “F” symbols should have <no transfer> in the “Transferred to” column.
- For more details about the types of scheme change, see CPC Guide.

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B. New, Modified or Deleted Note(s)

SUBCLASS G06F - ELECTRIC DIGITAL DATA PROCESSING (computer systems based on specific computational models G06N)

<u>Type*</u>	<u>Location</u>	<u>Old Note</u>	<u>New/Modified Note</u>
D	G06F7/499	{ documents published before 12-2005 are not systematically classified in the sugroups of G06F7/499 : See the relevant subgroup of G06F7/48 and the ICOs G06F7/499 + }	<u>Delete</u> the <u>entire</u> existing Note.

*N = new note, M = modified note, D = deleted note

NOTE: The "Location" column only requires the symbol PRIOR to the location of the note. No further directions such as "before" or "after" are required.

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2. A. DEFINITIONS (modified)

G06F3/14

Definition statement

Replace: The entire “Definition statement” section with the following updated text.

- Interfaces between processor and display system (with or without a standard bus).
- Multiple busses connecting processor, display system and/or other subsystems: e.g. video zoom busses, multimedia busses besides the standard bus.
- Data being furnished to the display system being generated by a multiplicity of sources.
- Data of different types being furnished to the system that displays the data (it can be a display system or a complete computer).
- Interfaces between the host and the display system, especially for system that have a structure different from the structure outlined above (older or special systems).
- Plurality of symbol or graphics generators cooperating with one display unit.
- Aspects of the operating system that have impact on the display system and are not related to a particular aspect of the physical construction of the display.
- Transferring data from an Internet host to the display system.
- kvm-switches, if they (also) switch between a plurality of data sources (i.e. computers).

Insert: The following new “Relationships with other classification places” section.

Relationships with other classification places

Data handling that is pertinent neither to the kind of visualisation unit that is used nor to the frame buffer access is to be classified in G09G 5/39.

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Special rules of classification

Replace: The entire "Special rules of classification" section with the following updated section.

When a standard bus is present, documents will be classified only if they contain details of the standard interface that are peculiar for the display system; "Non-standard" bus interfaces include all bus interfaces (SPI, LVDS, MIPI).

G06F3/1423

Definition statement

Replace: The entire "Definition statement" section with the following updated section.

Display devices in which more than one display unit is connected to the display system, irrespective of the type of display.

Insert: The following new "Relationships with other classification places" section.

Relationships with other classification places

In cases where one display (device) controller controls two displays, group G09G 2360/04 should be considered for classification.

Controlling a plurality of local displays, with or without display controller: When more than one display terminal is controlled by a local host and some details of the display controller are present, this should be classified in group G06F 3/1423. The controlling of "plurality of displays" takes precedence over the "display controller" in group G09G 5/363.

Conflict between "plurality of local displays" and "conversion of CRT signals for a flat panel":

Group G09G 5/366 covers display systems with more than one display, namely the CRT and the LCD. In these cases, classification should be given in G06F3/1423 or G06F3/1431 or G06F3/1438 and G09G 5/366: if the subject matter is mainly the interface, then classification in groups G06F3/1423 or G06F3/1431 or G06F3/1438 is preferred; if it is the graphic controller, then symbol G09G5/366 should be given. For search see also G09G 2360/04.

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Limiting references

Delete: The entire “Limiting references” section.

Insert: The following new Informative references section.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Using a single graphics controller	G06F 3/1431
Using more than one graphics controller	G06F 3/1438

Special rules of classification

Delete: The entire “Special rules of classification” section.

G06F5/00

Limiting references

Delete: The entire “Limiting references” section.

Informative references

Insert: The following new references in the existing Informative references section.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Conversion of the form of the representation of individual digits	H03M 5/00
Code conversion	H03M 7/00
Parallel/series conversion	H03M 9/00

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G06F5/06**Definition statement**

Replace: The existing text in the “Definition statement” section with the following updated text.

Shift registers with certain functionality and logic implementing it.

Buffer systems in general.

FIFO [First In, First Out] using linked lists.

FIFO of the types "shift-in, individual-out" or "individual -in, shift-out".

Effectuating transfer of data between different clock domains.

Limiting references

Replace: In the “Limiting references” table this existing reference: “FIFOs having (limited) facilities for outputting other than the first data items, e.g. “either first or second out” G06F 7/78, G06F 7/785” with the new reference shown below.

Arrangements for changing the order of data flow	G06F 7/78
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Delete: The following two references from the existing “Limiting references” table.

Reordering based on contents of data in general	G06F 7/22
FIFO with priority-controlled output	G06F 13/18

Informative references

Insert: The following new references in the existing Informative references section.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Reordering based on contents of data in general	G06F 7/22
FIFO with priority-controlled output	G06F 13/18

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G06F5/065

Delete: The entire “G06F5/065” definition.

G06F5/10

Limiting references

Delete: The following two existing references from the “Limiting references” table.

FIFOs of the types "shift-in, individual-out" or "individual-in, shift-out"	G06F 5/06
Addressing methods of the memory	G06F 12/02, G11C 8/00

Insert: The following new Informative references section.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Addressing methods of the memory	G06F 12/02, G11C 8/00
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G06F5/16

Definition statement

Replace: The existing text in the “Definition statement” section with the following updated text.

Alternating address by address, i.e. Odd-even.

Limiting references

Delete: The entire “Limiting references” section.

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Insert: The following new Informative references section.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Addressing methods of the memory	G06F 12/02, G11C 8/00
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G06F7/00

Definition statement

Insert: A period at the end of the following existing statement in the “Definition statement” section (shown below).

Examples of such methods and arrangements are: arithmetic circuits implemented using basic logic gates, implementation of complex logic gates, and implementation at transistor level, specially designed for arithmetic operations.

Limiting references

Delete: The following existing references from the “Limiting references” table.

Logical operations on words in combination with arithmetic operations	G06F 7/57
Arrays of processors with common control	G06F 15/80
Information retrieval, or database structures therefor	G06F 16/00
Conversion between different representations of Boolean functions, e.g. Boolean formula synthesis from Karnaugh maps, generation of Reed-Muller expansions	G06F 17/00
Complex mathematical operations	G06F 17/10

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Insert: The following new “Informative references” table.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Logical operations on words in combination with arithmetic operations	G06F 7/57
Arrays of processors with common control	G06F 15/80
Information retrieval, or database structures therefor	G06F 16/00
Conversion between different representations of Boolean functions, e.g. Boolean formula synthesis from Karnaugh maps, generation of Reed-Muller expansions	G06F 17/00
Complex mathematical operations	G06F 17/10

Special rules of classification

Replace: All of the text in the existing “Special rules of classification” section with the text below.

Documents classified in G06F 7/00 should also be further classified in the appropriate indexing codes G06F 2207/00 - G06F2207/7295.

G06F7/02

Limiting references

Delete: The following two references from the existing “Limiting references” table.

Information retrieval	G06F 16/00
Comparing pulses	H03K 5/22

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Insert: The following new “Informative references” section.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Information retrieval	G06F 16/00
Comparing pulses	H03K 5/22

G06F7/026

Limiting references

Delete: The entire “Limiting references” section.

Insert: The following new “Informative references” table.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Min or max functions producing one of the two input values	G06F 7/544
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G06F7/22

Definition statement

Replace: The text in the “Definition statement” section with the following updated text.

Classification of digital data.

Maximum, minimum or median value of a set of data.

Limiting references

Delete: The entire existing “Limiting references” section.

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Insert: The following new “Informative references” table.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Minimum or maximum of two values	G06F 7/544
Classifying in pattern recognition	G06K 9/00

G06F7/72

Definition statement

Replace: All of the existing text in the “Definition statement” section with the updated text shown below.

A mod N, modulo addition, modulo subtraction

Further details of groups

G06F 7/721:

Covers for e.g. modular division; both with composite moduli and in prime number fields.

G06F 7/723:

This subgroup covers RSA [Rivest–Shamir–Adleman] cryptosystem in general.

G06F 7/724:

Covers mainly (binary) extension fields; prime number fields using modular arithmetic are covered in **G06F 7/72** - **G06F 7/723**, **G06F 7/727** and **G06F 7/728**.

For this type of arithmetic the term "Galois field" and symbols of the type $GF(p^n)$ are characteristic, e.g. $GF(2^4)$.

G06F 7/725:

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Elliptic curve cryptography [ECC] is classified in this subgroup only if specific adaptations for elliptic curves are present.

G06F 7/726:

This subgroup covers rational functions $p(x)/q(x)$ for example and inversion in extension fields is covered in [G06F 7/726](#).

G06F 7/728

Montgomery reduction involves adding of multiples of the modulo, followed by right shifting.

G06F 7/729

This subgroup covers the Chinese Remainder Theorem for non-RSA for example.

A residue number system (RNS) is a system in which a number is represented by a series of digits, each of which is the remainder of that number with respect to a different modulus m_i :

e.g.: moduli \rightarrow 5 3 2

$26_{10} = 1\ 2\ 0$

The maximum number representable is $M = (\prod_i m_i) - 1$

e.g.: $(2 \times 3 \times 5) - 1 = 29$ in the above case.

Insert: The following new "Informative references" section.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Error detection/correction for coding in general	H03M 13/00
Error detection/correction in transmission	H04L 1/00
Secret communication	H04L 9/00
Optical residue arithmetic devices	G06E 1/065
Error detection/correction in computers	G06F 11/00

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G06F7/76

Definition statement

Replace: All of the existing text in the “Definition statement” section with the updated text shown below.

For example, masking, shuffling

G06F 7/766 covers i.e. serial or parallel generation of all permutations.

G06F 7/768 covers e.g. endian conversion.

Insert: The following new “Relationships with other classification places” section.

Relationships with other classification places

Boolean masking in block or stream ciphers is covered by H04L 2209/04.

Endian conversion by memory addressing is covered by G06F12/04.

Bus coupling with endian conversion and endian conversion instruction are covered by G06F13/4013.

Limiting references

Delete: The entire existing “Limiting references” section.

Insert: The following new “Informative references” section.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements for rearranging, permuting or selecting data according to the content of the data	G06F 7/06, G06F 7/22
Parallel / series conversion or vice versa	H03M 9/00

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G06F7/78

Replace: All of the existing text in the “Definition statement” section with the updated text shown below.

LIFO [Last In, First Out], also called stack or pushdown store:

- Reversal of a train of data words.
- Reversal of a train of data bits.

Devices called FIFO [First In, First Out], but having possibilities to extract also other data items than the first one.

Matrix transportation devices.

Other devices with an output sequence different from the input sequence, but independent of the contents of the data.

Limiting references

Delete: The entire existing “Limiting references” section.

Insert: The following new “Informative references” section.

Informative references

Attention is drawn to the following places, which may be of interest for search:

FIFO-devices	G06F 5/06
Cache-memories	G06F 12/08
FIFO with priority-controlled output	G06F 13/18
Reordering based on contents of data, e.g. sort key	G06F 7/22