Sistemi 1, Strojna oprema, Uvod v predmet
Systems 1, Hardware, Course introduction

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Predviden Učni načrt predmeta - Tentative Syllabus of the Course

Teden / Week	Predavanja / Lecture topics	Vaje / Practicals	Ostalo / Other
1	Uvod / Introduction	Number systems / Številski sistemi	
2	Digitalna logika / Digital logic	Introduction to assembly / Uvod v strojni jezik	
3	Številski sistemi / Number systems	Memory addressing / Naslavljanje spomina	
4	Računalniška aritmetika / Computer Arithmetic	Arithmetic operations / Aritmetične operacije	
5	Razvoj strojev za računanje / Computer evolution and performance	Conditional statements / Pogojni stavki	
6	Osnovni principi delovanja in vodila / Computer functions and interconnections	Loops / Zanke	
7	Predpomnilnik / Cache memory	Stack and functions / Sklad in funkcije	Midterm 1
8	Pomnilniška hierarhija / Internal memoy technology	Arrays and strings / Tabele in nizi	
9	Zunanji pomnilnik / External memory	Display and keyboard / Prikazovalnik in tipkovnica	
10	Vhod in izhod / Input Output	I/O Interrupts / V/I Prekinitve	
11	Aritmetika procesorja (predstavitev informacije) / CPU Arithmetics	Graphics - bitmap / Rastrska grafika	
12	Nabor strojnih ukazov / Instruction set	Graphics - text mode / Tekstovni način	
13	Sestava procesorja in funkcije / CPU structure and functions	Graphics - chars and scrolling / Znaki in drsenje	
14	RISC	Graphics - animations / Animacije	Project defense
15	Superskalarni procesorji / Superscalar processors	Zagovori projektov	Midterm 2

Prekrivanje snovi / Topics overlap

- Teme vaj in predavanj se ne nujno prekrivajo.

- Na vajah ne predpostavljajte, da je potrebno ponoviti snov iz predavanj.

- Na vajah se predpostavlja, da pokrito snov predavanj razumete.

- Snov predavanj vam bo skozi semester pomagala razumeti različne koncepte, ki jih boste na vajah že obdelali.

- The topics of the practicals and lectures do not necessarily overlap.

- Do not expect that you'll cover theory during practicals that has been covered during lectures.

- It is expected of you that during practicals you understand the content already covered in lectures.

- The content of the lectures will help you understand various concepts throughout the semester, which you will have already worked on in practicals.

Ocenjevanje / Grading

- **Projektno delo: 30%**
  - Uspešno opravljeni projekti so pogoj za pristop k pisnemu izpitu (ali veljavnost kolokvijev)

- **Pisni izpit: 70%**
  - Lahko 2 kolokvija
  - Prvi del: teoretična vprašanja tega kar bomo delali na predavanjih.
  - Drugi del: praktične naloge vsebine obdelane na vajah.

- Ustni izpit: izvajalci pri predmetu lahko po potrebi določijo ustni izpit. Ustni izpit lahko zahteva tudi študent sam. Ustni izpit ni najmenjen pridobivanju dodatnih točk pri drugih delih ocene. Poseben primer je ustni izpit določen pri komisijskem izpitu.

- **Končna ocena:** da bi naredili izpit, mora vsak of zgoraj navedenih delov biti ocenjen nad 50 %.

- **Project work: 30%**
  - Positively graded projects are a prerequisite for the written exam (or the validity of midterm exams)

- **Written exam: 70%**
  - Possible 2 midterm exams
  - First part: theoretical questions of the content covered during lectures.
  - Second part: practical tasks covering content from the tutorials

- Oral exam: the course managers may, at their own discretion, invite the student to an oral exam. The oral exam can take place also if requested by student. Oral exam is not for obtaining additional points for other parts of the course. A special case is an oral exam in front of a committee.

- **Final grade:** to pass the course each of the above mentioned parts needs to be graded over 50%

Domače naloge / Home assignments (HAs)

- Domače naloge so neobvezne, vendar priporočamo, da jih redno opravljate.

- Domače naloge so v pomoč pri pripravi na izpite.

- Asistenti vam bodo na voljo do dva tedna po objavi vsake naloge, da pregledajo vaše rešitve in vam dajo napotke, če boste želeli in jih vprašali.

- Vprašajte za pomoč ali razlago na e-učilnici.

- Ne spraševati za vse rešitve in postopke nekaj dni pred kolokviji ali izpiti.

- Podpiramo sprotno delo.

- HAs are optional, but we highly encourage to complete them regularly.

- The tasks given for HA will help you prepare for exams.

- Teaching assistants will be available to review your solutions and give you guidance if asked up to two weeks after a particular assignment have been published.

- Ask for help or explanations on e-class.

- Do not ask for all solutions and procedures a few days before midterms or exams.

- We support regular work and discourage binge studying practices.

Pisni izpit / Written exam

- Pisni izpit je sestavljen iz dveh delov: teoretični del (30 %) in praktični del (70 %).

- Na izpitu študenti ne smejo imeti ali uporabljati telefonov, pametnih ur, drugih podobnih naprav, literature, zapiskov ... razen če je to izrecno dovoljeno.

- Teoretični del traja 20 - 30 minut. Uporaba literature in pripomočkov ni dovoljena.

- Praktični del traja 70 - 90 minut. Po predhodnem dogovoru je dovoljena uporaba literature, zapiskov, kalkulatorjev in programske opreme, ki jo uporabljamo na vajah (simulator).

- Izpit lahko poteka na računalnikih ali pisno na papir.

- Ocena pisnega izpita je pozitivna, če je študent dosegel vsaj 50 % pri vsakem od obeh delov. To je vsaj 15 % (od 30 %) pri teoretičnem delu in vsaj 35 % (od 70 %) pri praktičnem delu.

- Vsak poskus goljufije ali nedovoljene komunikacije, fizične ali elektronske, se prijavi fakultetni komisiji, ki določi ustrezne sankcije (npr. prepoved opravljanja izpita za določen čas, v hujših ali ponavljajočih se primerih pa lahko celo izključitev iz univerze).

- Written exam consists of two parts: the theoretical part (30%) and practical part (70%).

- During the exam students should not have or use phones, smart watches and other similar appliances, literature, notes ... unless this is explicitly allowed.

- The theoretical part lasts 20-30 minutes. The use of literature and aids is not permitted

- The practical part lasts 70-90 minutes. If said so in advance the use of literature, notes, calculators and software used during practicals (simulator) is allowed.

- The exam can take place on computers or on paper.

- To pass the exam the student should obtain at least 50 % in each of the two parts. This is 15% (out of 30%) in the theoretical part and at least 35% (out of 70%) in practical part.

- Any attempt at fraud or illicit communication, whether physical or electronic, is reported to the faculty commission, which sets appropriate sanctions (e.g. a ban on taking next exam, and in severe or repeated cases, even expulsion from university).

Kolokviji / Midterms

- Izvajalci predmeta lahko razpišejo dva kolokvija.

- Študenti lahko opravijo pisni izpit z dvema kolokvijema – pozitivna ocena kolokvija llahko nadomesti pisni izpit. Kolovija torej nista pogoj za pristop k pisnemu izpitu.

- Kolokviji so razdeljeni na dva dela tako kot pisni izpiti in pri pisanju kolokvijev veljajo ista pravila.

- K prvemu kolokviju lahko pristopite le, če imate v vašem indeksu na voljo ta predmet (se lahko prijavite na izpit).

- Za izpolnjevanje pogojev za 2. kolokvij morajo študenti pridobiti najmanj 40 % na teoretičnem delu in najmanj 40 % na praktičnem delu pri prvem kolokviju.

- Za uspešno opravljen pisni izpit mora biti seštevek vsakega dela od obeh kolokvijev skupaj vsaj 50%. Na primer: če na prvem kolokviju študent doseže 40 % pri teoretičnem delu, mora doseči pri teoretičnem delu drugega kolokvija najmanj 60 %. Enako velja za praktični del.

- Midterms are provided at a discretion of the course managers.

- Students can pass the written exam with 2 midterm exams – obtaining a positive grade substitutes the written exam. So, the midterm exams are not a prerequisite for the written exam.

- Midterm exams are split in two parts in the same way as written exams and the same rules apply.

- Students can write the first midterm only if they are able to enroll on the exam at this course.

- To qualify for the 2dn midterm exam, students need to obtain at least 40% on the theoretical part and at least 40% on the practical part in the 1st midterm.

- To pass the written exam, the sum for each part of both midterm exams should be over 50%. For example: if students receive 40% for the theoretical part in the 1st midterm exam, they should receive at least 60% for the theoretical part in the 2nd midterm exam. The same rule applies for the practical part.

Ocenjevalna lestvica / Grading scale

Percentage		Grade
100-95	……………………………………	10
94-85	……………………………………	9
84-75	……………………………………	8
74-65	……………………………………	7
64-50	……………………………………	6

Ogled izpitov / Exam viewing

- Izpite/kokolvije lahko pogledate v naprej določenem času in kraju (kabinet, dan, ura).
- Kasnejših "reklamacij" se ne upošteva.
- Ogled ni namenjen barantanju za oceno (če želite zvišati oceno brez nobene podlage).
- NE BARANTAJTE ZA OCENO!
- NE BARANTAJTE ZA OCENO!
- NE BARANTAJTE ZA OCENO!
- NE BARANTAJTE ZA OCENO!
- NE BARANTAJTE ZA OCENO!

- You can view the (midterm) exams at a predetermined time and place (office, day, hour).
- Subsequent "complaints" are not taken into account.
- The view is not intended for bargaining (raising the grade without any basis).
- DO NOT BARGAIN!
- DO NOT BARGAIN!
- DO NOT BARGAIN!
- DO NOT BARGAIN!
- DO NOT BARGAIN!

Pogoji – ustni izpit / Conditions – oral exam

V primeru ustnega izpita :

- V primeru, da študenti ne opravijo ustnega izpita, morajo ponovno opravljati pisni + ustni izpit!

- Pisni izpit velja le za tekoči izpitni rok! Na ustni izpit morajo študenti iti na istem izpitnem roku!

- V primeru komisijskega izpita (4., 5., in 6. opravljanje):
  - Če študenti opravijo pisni del, ustnega dela pred komisijo ni, razen če za to zaprosijo.
  - Če na komisijskem izpitu študenti ne opravijo pisnega dela imajo ustni zagovor pred komisijo.

In case of an oral exam:

- If students do not pass an oral exam, they must take a written + oral exam again!

- The written exam is valid only for the current exam period! Students have to attend the oral exam in the same period!

- In case of a committee exam (4th, 5th and 6th attempt):
  - If students pass the written part, they do not have the oral part except if asked for.
  - If during the committee exam students don't pass the written exam, they will have an oral exam in front of the committee.

Projekt / Project

- Če ste oddali projet lani, je le-ta veljaven tudi letos.

- Za uspešno izvedbo morate oddati projekt po navodilih asistentov.

- Delo na projektu se bo začelo okoli datuma prvega kolokvija.

- Za projekt morate pripraviti svojo idejo, več informacij pa bo podanih med vajami.

- Teme projektnih nalog so individualne, študenti si temo izberejo sami.

- If you have submitted your project last year it is still valid this year.

- In order to pass you need to submit your project as instructed by TAs.

- Work on the project will begin around the time of the first midterm exam.

- You need to come up with your own idea about the project but more information will be given during the tutorials.

- The topics of project assignments are individual, students select the topic themselves.

Projekt / Project

Pri projektni nalogi lahko zaslužite dodatne točke, če najdete napako v učbeniku (pripročnik) ali v simulatorju. Le prvi študent, ki bo prijavil neko specifično napako, bo zanjo prejel dodatne točke.

Kriterij je naslednji:

- 5 TOČK - za očitno pravopisno oz. tipkarsko napako. S tem dokazujete, da pri delu za projekt natančno študirate tudi gradivo.
- 10 TOČK - za konceptualno napako v učbeniku ali hrošč (bug) v simulatorju. Konceptualna napaka v učbeniku je lahko nekonsistentna raba izrazov, napačna raba izrazov, napačne vrednosti, napačen pomnilniški naslov, komentar v kodi, ki ne odraža dejanskega ukaza ali namena, itd.

Celoten projekt je vreden 100 točk. Če menite, da ste našli napako, to sporočite na forumu (e-učilnica) ali po elektronski pošti. Po kritičnem pregledu, bomo odgovor objavil na forumu.

Dodatne točke dobite le, če je projekt pozitivno ocenjen (>= 50).

Extra points can be earned as a part of your project grade if you find and report a mistake in our textbook (tutorial) or a bug in the simulator. Only the first student to report a problem will get the extra points.

The criteria is the following:

- 5 POINTS - an obvious grammatical error, a typo in the textbook. To us, this is a proof that you are studying the material as a part of your project work.
- 10 POINTS - for a conceptual error in the textbook or a bug in the simulator. The conceptual error in the textbook could be a non-consistent use of a term, the wrong use of a term, incorrect values, memory addresses, a comment in the code that does not match the actual instruction or intent, etc.

The project in total is worth 100 points. If you believe you found a mistake, please let us know either on the forum (e-classroom) or by email. We will then take a critical look and post our reply on the matter here.

Bonus points are valid only if the project itself is positively graded (>= 50).

Dodatne točke / Bonus points

Lahko dobite dodatne točke

- za zelo dobre projekte,
- za oddkrite napake pri vajah,
- za oddkrite napake na predavanjih (prosojnicah)

- Ne pričakujte, da jih boste dobili za vsako tiskarsko napako.
- Te točke niso zamenjava za točke pri izpitih/kolokvijih.

- Dodatne točke bomo upoštevali, če ste med ocenami! Ponavadi so dodane k projektu.

We MIGHT give bonus points for

- extra good projects,
- spotting mistakes in practicals,
- spotting errors in lectures (and slides).

- Do not expect to be given them for every typo.
- Do not bargain these points for missing points on (midterm) exams

- Extra points will be considered if you are between the grades! They are usually added to the project.

Pravila / Rules

- Pravilnik o disciplinski odgovornosti študentov Univerze na Primorskem

  https://www.upr.si/files/static/361

- Etični kodeks

  https://www.upr.si/si/univerza/eticni-kodeks

- Rules on disciplinary responsibility of the students of the University of Primorska

  https://www.upr.si/files/static/1467

- The Code of Ethics

  https://www.upr.si/en/university/eticni-kodeks

Bonton pogovora / Etiquette of conversation

- Uporabljajte vaš uraden e-naslov!

- Ne puščajte polje "zadeva" prazno.

- Vljudno pozdravite.

- Predstavite se, dopišite letnik in vašo vpisno številko.

- Povejte za kateri predmet gre.

- Bodite vljudni in uporabljajte formalni jezik.

- Potrudite se pisati slovnično pravilno, uporabljajte vejice, pike in ostala ločila.

- Ne uporabljajte okrajšav, kjer niso ravno potrebne.

- Uporabite črkovalnik.

- Ne pišite ene e-pošte za drugo, če ne dobite takoj odgovora.

- Ne pričakujte odgovora med vikendi in prazniki. Če ga dobite, je to bonus.

- Use your formal university email address.

- Do not leave the subject filed empty.

- Include a greeting at the beginning.

- Introduce yourself, add the year of study and your student number.

- Tell us which course your question is about.

- Be polite and use formal language.

- Try to write in a grammatically correct form, use full stops and other punctuation.

- Don not use abbreviations where they are not necessary.

- Use a spell checker.

- Do not write one email after another if you do not get an immediate response.

- Do not expect an answer on weekends and holidays. A received reply is a bonus.

Česa ne pisati / What not to write

- Ne sprašujte kako se reši naloga dan pred izpitom.

- Ne barantajte za oceno!

- Ne barantajte za drugačne pogoje, ki so jih deležni vaši sošolci.

- Ne sprašujte o formalnostih (vpis ocen, prijava, datumi, vsebina nalog, katera snov bo na izpitu), o katerih smo se pogovorili na predavanjih ali so na e-učilnici (tudi na prosojnicah) – vprašajte sošolce!

- Ne sprašujte na kaj se osredotočiti pri učenju. Osredotočiti se je potrebno na CELOTNO snov.

- Don't ask how to solve a task a day before the exam.

- Don't bargain for a grade!

- Don't bargain for different conditions your classmates face.

- Don't ask about formalities (entry of marks, registration, dates, content of assignments, the topics of the exam) that have been discussed in lectures or are on the e-classroom (including in slides) - ask your classmates!

- Don't ask what to focus on when studying. Focus on EVERYTHING you have been thought.

Ne spraševati izvajalcev predmeta, če lahko na vaše vprašanje odgovorijo vaši sošolci.

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Do not ask course instructors if your classmates can answer your question.

Pogosta (neumetsna) vprašanja in odgovori / FA (innapropriate) Q

- When will we get the results of the exam? It's been 3 days already. **OR** I just wanted to let you know that my grade hasn't been entered in SIS yet, even though I registered for yesterday's exam. **OR** I am the guy that wrote the exam yesterday, I still didn't get the grade in ŠIS. Is there a problem?

- I have 27 points on practical part and you gave only 7 for theory. If you can't give me more points on the theoretical part do I need to go on the exam or can we do something oral or points from homeworks.

- I would say I fell short of a ten more due to an unfortunate event than due to lack of knowledge of the materials. In the midterm 1, I lost 10 points on the last practical task because I was rushing, didn't read the problem text through and wrote a program doing a different thing than asked for … Being so close to a ten I am tempted to argue I do deserve it.

- There is NO problem. We have 14 days to grade the exams. If you passed with midterms, we'll enter your grade when we'll enter them for all students attending that particular exam date you also registered for. But we do our best to enter the grades as early as possible.

- We cannot do anything oral about it. What we can do is: you come to the next exam prepared and pass.

- If you believe you deserve a higher grade, you need to show it. We cannot give it to you based on the colour of your eyes.

Pogosta (neumetsna) vprašanja in odgovori / FA (innapropriate) Q

- I missed more than 3 homework assignments, as a result of that I was not able to do Projects. So, I am wondering am I able to enrol the second year because of that or what are my next options?

- I am writing this email in order to ask if I can still somehow attend the programming final on the 28th of January even though I missed the registration period for the date. I have already written to professor Jernej but he hasn't replied for the past 3 days.

- Is there any possibility of hybrid lectures, since the time scheduled for this course overlaps for most of the students from the second year of study?

- I am writing this email to ask on which date exactly are we going to be having our first midterm? I received an email from professor Domen Šoberl stating that it will be on the 5th of April.

- No idea. Ask student office. We are not keeping track of your grades and credit points obtained.

- I don't teach Programming I or II so not sure why you're asking me. Email is an asynchronous tool and does not require immediate reply. And believe me, the professor did not forget you exist. Also, write the exact name of the course.

- If this course overlaps with another one, how will the hybrid lecture help you? Will you listen to both at the same time? And also, the leadership of the faculty does not allow it.

- If you received an email about the date, why do I need to confirm it as well?

Pogosta (neumetsna) vprašanja in odgovori / FA (innapropriate) Q

- I know you said that every point you gave us is well thought-out. But I am missing 3 points to pass the subject and I am lost at the moment because I passed the first midterm, both practical and project work by now.

- I am so sorry for writing to You about this, but I have been trying really hard this whole semester and I feel really bad about failing the whole subject over the theoretical part of just one midterm exam.

- To take the grade, I need to enrol for an exam in ŠIS, right? I apologize for bothering you. Thank you one more time for helping me.

- In the slides it's written that I need 50% of midterms and 50% of project. I am very sorry if I am asking so many questions, but I want to be sure. Can you tell me if I have passed the exam?

- I obtained 14 points in the theoretical part and 35 points in the practical part... Is this 40% of the midterm? Am I still able to pass the course? Is it right that you need to achieve 40% of the midterm to pass? Am I able to pass? I hope you can help me on this.

- But you didn't pass the second midterm. This can happen. It is not unheard of.

- If you have been studying really really hard, it will not be difficult to pass the next exam then.

- What do you think? If you don't register for an exam date, how can we enter the grade?

- Such question gives me doubt you are fit for university.

- The same as the above. Do the math.

Pogosta (neumetsna) vprašanja in odgovori / FA (innapropriate) Q

- I am missing 2 points on the theory in order to pass with midterms. I don't want to just get 2 free points, I'd like to earn them. I feel like I was so close to getting them.

- As Professor Branko Kavsek is currently absent, I would like to know when the second midterm will be held for this course and if any prior registration is required (as for the first one)? I didn't see any announcement in the e-classroom.

- I just need 4 more points to pass. I know that I did not study enough and I am sorry but I was having kidney problems and was having really tough aches, which did not allow me to study to my full potential.

- I do not have a place to stay in Slovenia. That is why it would be difficult for me to come. Can this exam be held online.

- Go to the next exam and ear them.

- How would I know this? We don't notify each other about the exam dates or discuss it over coffee.

- I hope you feel better by now and can study enough to pass the exam.

- How will you manage to do other exams? Or is this the only one you have not passed with midterms? The leadership also demands we have in person exams and not online ones. You can figure out why.

Pogosta (neumetsna) vprašanja in odgovori / FA (innapropriate) Q

- I have decided to take the exam on the 24.6. to try for a better grade and, having passed by midterms, was wondering if the rule is the biggest or last grade.

- Is there a chance that You will be lowering the minimum for passing the theoretical part?

- I don't think I showed my true knowledge but I do think I should have those two points.

- Is there anything I can do to improve the grade? Oral exam or some project work? I just want a 10 because it will really help me a lot with the extending the scholarship.

- I am writing you this email to ask if you could enter my grade into sis I forgot to enrol in the June/Jully terms, hence I enrolled in the August exam.

- You need to ask student office. No idea how this works. Actually, if you even suspect your question is about administrative procedures, don't bother writing to any lecturer.

- No.

- If you think you should have those two points, you should have earned them by answering the questions correctly.

- I suppose we answered this already. But since it comes up so often I'll answer again. Come to the next exam and show you deserve a 10. We are not a fruit and vegetables market where you can bargain.

- You only need to provide this info if you passed the exam with midterms in previous academic year and you are enrolling on the exam in the current. Otherwise, we have you on the list.

Pogosta (neumetsna) vprašanja in odgovori / FA (innapropriate) Q

- on the theory i have sadly 13 points out of 15 needed , and which is more sad I didn't have the chance to write for even 2 points more only because i had no time left, I completely forgot that I have only 20 minutes for the theory part and i left the easiest question for last and on the answer you can see that its not finished .it' really not a situation where i didn't know the answer, its sign magnitude and twos complement... Is it in any way possible that I can get those 2 points without coming to the next exam since i passed on the practical part ?

- hope I'm not bothering, I just have a question on whether we have something entitled to " focus]on " mainly for tomorrows' exam as we had some suggestions for the previous exams . Have a great day, and yes , this time I did enroll on time and properly,

- Please use also a pinch of grammar, spell checker and formal language. The answer is still no. You cannot get 2 points out of thin air. Or get advantageous treatment compared to other students for no reason. The matter is that I can probably deduct 5 points based on the rest of the text that shows some serious lack of knowledge. I'll stress this : I probably gave you more points than you deserve. Believe me.

- Focus on everything. I doubt there were suggestions for previous exams. Congratulation on succeeding to register. Learning some basic grammar, how to use a spell checker and formal language, would also help.

Pogosta (neumetsna) vprašanja in odgovori / FA (innapropriate) Q

- I'm writing to you to ask about my final subject grade. I registered for the last exam of Theoretical Computer Science 1 in hopes that you'd be able to put in my grade?

- Are the Theoretical Questions going to come from the 13 Pdf Documents posted on the E-Classroom or from other resources?

- I just wanted to say that I am perfectly familiar with the subject matter, but I just did not expect that the exam would last less than expected and because of that I just cannot get over the fact that not enough time prevented me from doing every single task to the very end and getting a much higher grade.

- Again, I am not authorised to enter grades for other courses.

- Again, they can cover everything taught about the topic during the lectures.

- Now you know what to expect on the next exam. Also, based on the fact that old exams are available online makes me wonder if you even looked at one and checked how much time it will take to solve all tasks. And all exams last the same.

Pogosta (neumetsna) vprašanja in odgovori / FA (innapropriate) Q

- I am sorry for disturbing you, but I haven't got any final grade on ŠIS. Thank you for taking the time.

- The submission on e-classroom is not possible anymore. This is why I send the project over email.

- I wondered if it is possible to see the exam that we wrote on e-classroom.

- I would like to kindly ask you if it is possible to arrange another exam or any other way where I can show that I deserve a passing grade.

- First of all, tell us which course this is about! But generally there are 3 possibilities. You either haven't registered to any of the exams in ŠIS, there hasn't ben an exam yet, or the exams have not been graded yet.

- If the rules are "not late submissions allowed", sending it over email will not help you.

- Yes. Go to e-classroom and check your answers. They will be available there for some time to come. If the exam was written on paper. There will be viewings arranged. Also, asking such a question gives me some doubts again.

- Can you just come to the next exam. This is what exams are for.

Pogosta (neumetsna) vprašanja in odgovori / FA (innapropriate) Q

- I need to pass exam, but yesterday I tried enrolling for the exam and somehow I managed to calculate wrong the 5 days before the exam. I wrote an email to the other professor, but for some reason he hasn't responded for more than 24 hours and im kinda on the edge

- I forgot to enrol for the exam in ŠIS. Can I come nonetheless?

- Please use a spell checker and formal language. Such emails do not do you service. Email is asynchronous tool for a reason. Every reputable business will tell you to expect an email in 3 working days. And if a person experiences email overload, the time might be longer.

- Generally if we do not approve, no. It is a way to cheat the system and of giving you the advantage compared to other students. But if we approve it and you fail the exam, the next date you'll enrol to you'll automatically fail, no matter the result. Be aware that this is specific for SIS 1 course. Also, if things get out of control and too many students start taking advantage of this, such a rule will not apply anymore. So we can ignore it whenever, even if it's written here. So don't take it for granted.

Pogosta (neumetsna) vprašanja in odgovori / FA (innapropriate) Q

- I have a question. Subject Mathematical Topics in English was an external elective subject but it's internal famnit subject. In referat they told me that coordinator can help regarding decision of this problem. I wrote him but got auto-reply that he is absent and to contact you in case of emergency. Is it possible to change Mathematical Topics in English subject to be internal elective in ŠIS?

- I'm in second year. My lectures are overlapping with your lectures. Do you have any suggestion or advice of what I could do? If you uploaded the lectures materials on e-classroom, Would I be able to pass my exam just from that?

- Is this really an emergency?

- I don't think that just from uploading my materials to e-classroom you can pass this exam. You will also have to study these materials.

Nekaj daljših odgovorov po prejetih več kot 5 e-sporočilih po vsakem kolokviju in izpitu

_____

Some lengthy replies after receiving more than 5 emails after each midterm and regular exams.

Zakaj ocena še ni bila vpisana / The grade has not been entered yet

Dragi študenti,

prenehajte nas obveščati, da vaše ocene niso vpisane v ŠIS.

- Če ste se udeležili izpita, imamo v skladu s pravilnikom univerze 14 dni časa, da ga ocenimo in vpišemo v ŠIS.
- Če ste ga opravili s kolokviji, imamo še vedno enako časovno obdobje.

Kljub temu obstaja možnost, da sta izpitna roka manj kot 19 dni narazen, kar predstavlja težavo, saj se drugega ne morete udeležiti (prijaviti se morate 5 dni pred izpitnim rokom). Potrudili se bomo, da dobite oceno čim prej.

Ocene se v ŠIS vnašajo paketno in ne posamično. Vaše končne ocene bodo na voljo v e-učilnici, preden bodo vnesene v ŠIS. Vedite, da nismo pozabili na vas!

Srečno, Matjaž

Dear students,

please stop notifying us that your grades have not been entered in ŠIS.

- If you have attended the exam, we have 14 days to grade and enter it in ŠIS in accordance with university bylaws.
- If you have passed with midterm exams, we still have the same time window.

Despite this, there is a possibility that two exam dates are less than 19 days apart, which creates a problem as you are not able to attend the second one (you need to register 5 days before the exam date). We will try our best to grade the exams ASAP.

The grades are entered in ŠIS in a batch and not on a one by one basis. Your final grades will be available in the e-classroom before entered in ŠIS. We have not forgotten you!

Best, Matjaž

A lahko dobim več točk? / Can I get more points?

Dragi študenti,

rezultati teoretičnega dela so na voljo v e-učilnici. Vsako podano točko sem dobro premislil in dodal tudi točke pri besedilu iz katerega sem lahko vaše znanje le domneval. Prav tako sem prezrl vse napačne dele odgovorov, ki so kazali na vaše pomanjkljivo znanje. Prejel sem skoraj 20 prošenj o tem, ali bi bilo mogoče dobiti še kako točko. Dovolite mi, da povem naravnost:

Rezultati izpita NISO PREDMET POGAJANJ!

Merila za ocenjevanje so priložena temu sporočilu. V e-učilnici imate dostop do svojih odgovorov. Samo in SAMO, če res menite, da bi morali dobiti več točk, se obrnite name po elektronski pošti. Če vaša prošnja za več točk ne bo utemeljena, bom pri končni oceni upošteval tudi napačne dele vsakega odgovora.

Lep pozdrav,
Matjaž Kljun

Dear students,

the results for the theoretical part are available in the e-classroom. I have given thought to each point given and also given points where you knowledge could be just assumed from the text. And I ignored all wrong bits in each answer, which showed your lack of knowledge. I have received nearly 20 requests about whether more points could be given. Let me be straight here:

- The exam results ARE NOT SUBJECT TO BARGAINING!

The grading criteria is attached to this message. You have access to your answers in the e-classroom. Only and ONLY if you really think you should get more points, contact me via email. If your request for more points will not be substantiated I will also take into consideration the wrong parts of each answer to give a final grade.

Kind regards,
Matjaž Kljun

Če se odgovor na vaše vprašanje nahaja zgoraj,
če ne pišete iz uradnega univerzitetnega e-naslova,

če na vaše e-sporočilo zlahka odgovorijo vaši sošolci,

če odgovor obstaja na prosojnicah/e-učilnici,
če bomo sporočilo smatrali kot nepomembno,

obstaja možnost, da odgovora ne dobite.

_____

If the answer to your question is available above,
if you are writing from an unofficial e-mail address,

if your e-mail is easily answered by your classmates,

if the answer is available on slides/e-classroom,
if we consider the message irrelevant,

there is a chance that you may not receive a reply.

Literatura / Literature

Knjige / Books

- Computer Organization and Architecture by William Stallings
- Computer Organization and Architecture by Linda Null and Julia Lobur
- Arhitektura računalniških sistemov 1 by Dušan Kodek
- Arhitektura računalniških sistemov 2 by Dušan Kodek

Prosojnice / Slides

- po predlogi dr. William Stallings

Vprašanja / Questions?

Imena in pojmi / Names and terms

- Arhitektura računalniških sistemov
- Organizacija računalniških sistemov
- Arhitektura in Organizacija

- Architecture of computer systems
- Computer architecture + Computer organisation
- Computer System Architecture + Computer organisation
- Computer Organization and Architecture
- Computer Organization & Systems
- Architecture and Organization

Arhitektura / Architecture

- Arhitektura so atributi, vidni programerju
  - Nabor ukazov, število bitov za predstavitev podatkov, V / I mehanizmi, tehnike naslavljanja.
  - npr. Ali obstaja ukaz množenja?

- Architecture is those attributes visible to the programmer
  - Instruction set, number of bits used for data representation, I/O mechanisms, addressing techniques.
  - e.g. Is there a multiply instruction?

Organizacija / Organization

- Organizacija je način same izvedbe funkcionalnosti
  - Krmilni signali, vmesniki, pomnilniška tehnologija.
  - npr. Ali obstaja strojna enota za množenje ali pa se to opravi z večkratnim seštevanjem?

- Organization is how features are implemented
  - Control signals, interfaces, memory technology.
  - e.g. Is there a hardware multiply unit or is it done by repeated addition?

Arhitektura in Organizacija
Architecture & Organization

- Vsa družina Intel x86 ima enako osnovno arhitekturo

- Družina IBM System / 370 ima enako osnovno arhitekturo

- To omogoča združljivost kode
  - Vsaj za nazaj
- Organizacija se razlikuje med različicami procesorja

- All Intel x86 family share the same basic architecture

- The IBM System/370 family share the same basic architecture

- This gives code compatibility
  - At least backwards
- Organization differs between different versions

Vloge in sestava / Structure & Function

- Vloge so definirane z delovanjem posameznih komponent kot del sestave
- Sestava določa način, kako so komponente povezane med seboj

- Structure is the way in which components relate to each other
- Function is the operation of individual components as part of the structure

Vloge / Functions

- Vse vloge računalnika so:
  - Obdelava podatkov
  - Shranjevanje podatkov
  - Prenos podatkov
  - Nadzor

- All computer functions are:
  - Data processing
  - Data storage
  - Data movement
  - Control

Pogled sestave
Functional View

- Obdelava podatkov
- Shranjevanje podatkov
- Prenos podatkov
- Nadzor

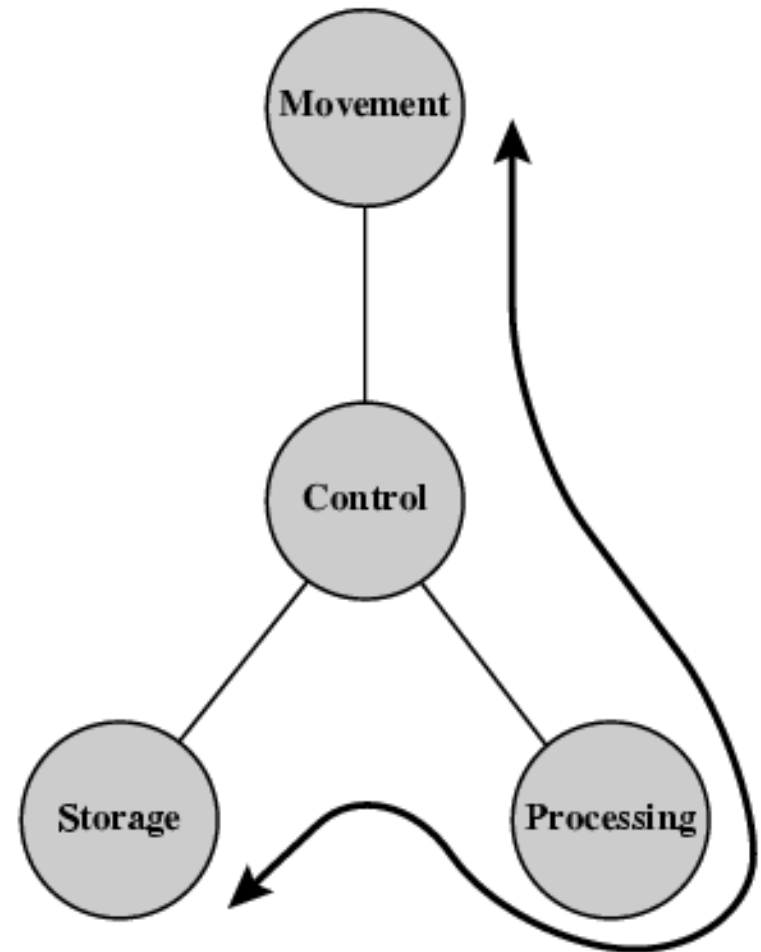- Data processing
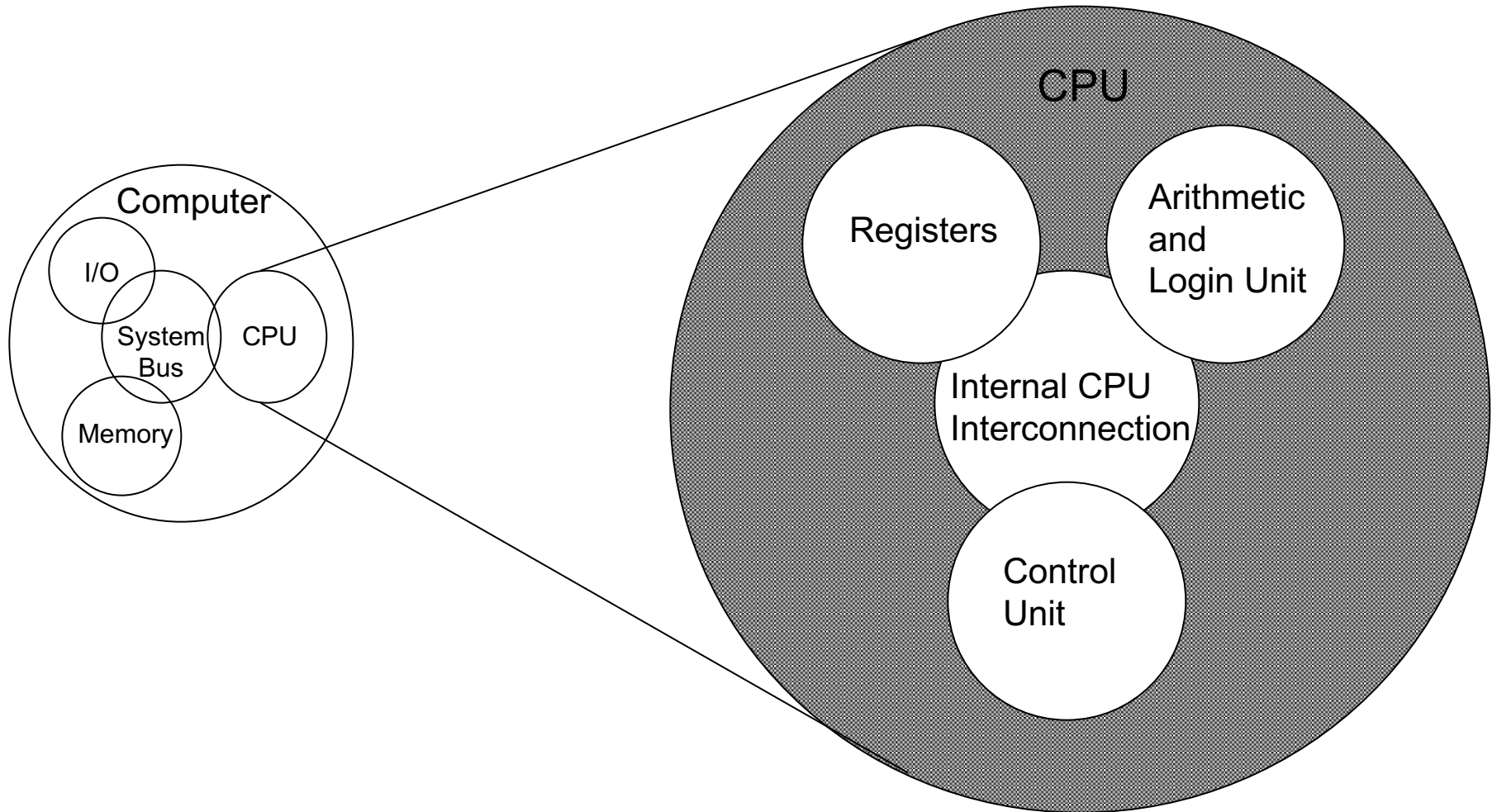- Data storage
- Data movement
- Control
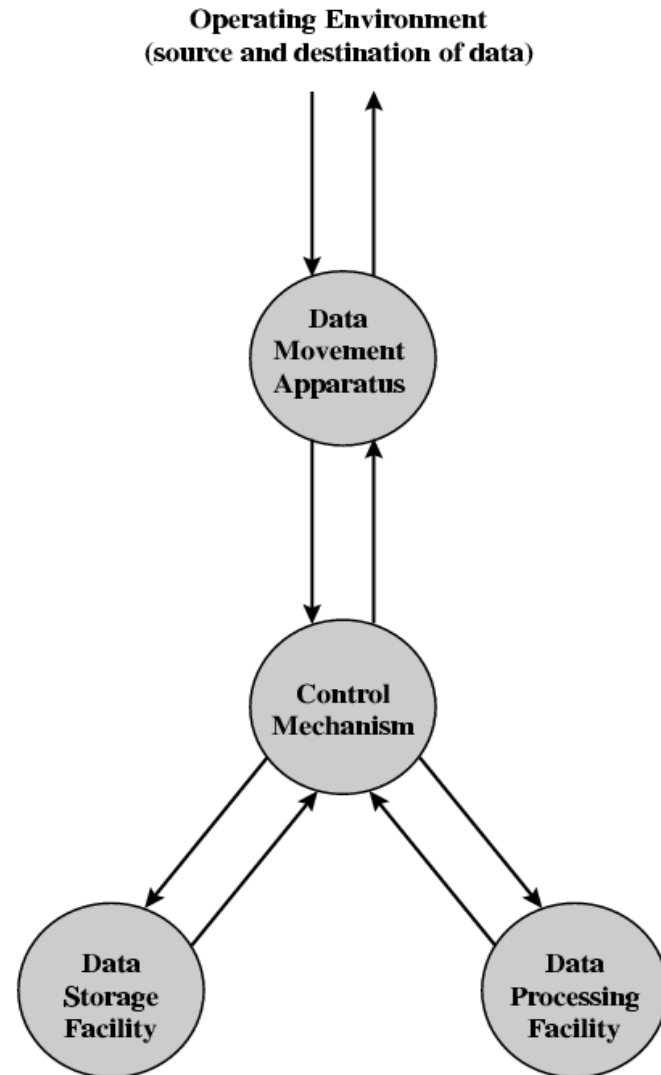
Operacija (a) prenos podatkov / Operation (a) data movement

- Obdelava podatkov
- Shranjevanje podatkov
- Prenos podatkov
- Nadzor

- Data processing
- Data storage
- Data movement
- Control
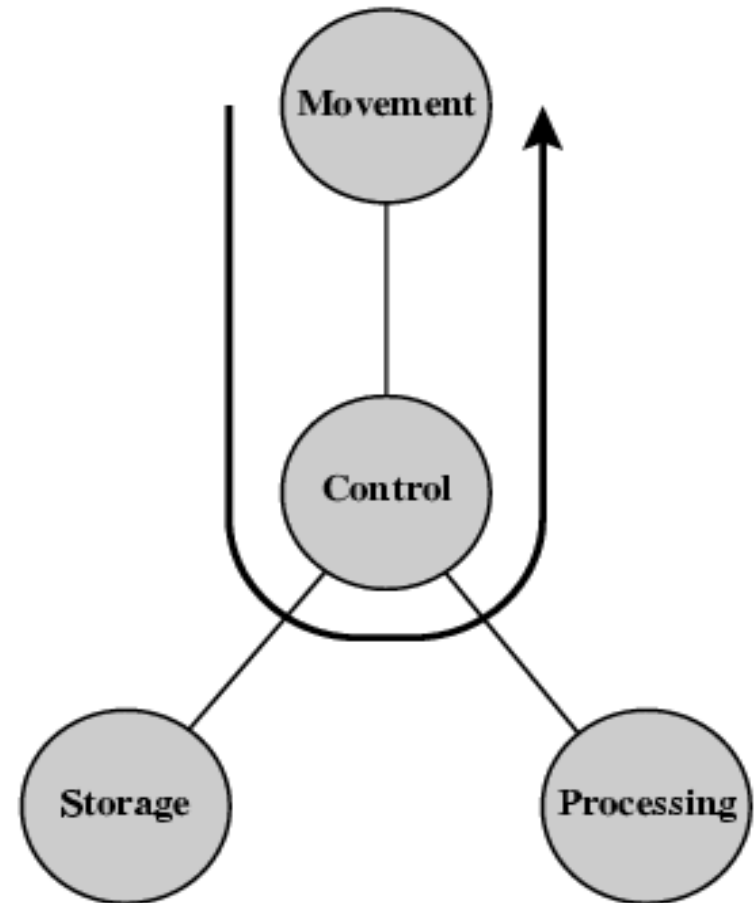
Operacija (b) nad pomnilnikom – shranjevanje / Operation (b) storage

- Obdelava podatkov
- Shranjevanje podatkov
- Prenos podatkov
- Nadzor

- Data processing
- Data storage
- Data movement
- Control
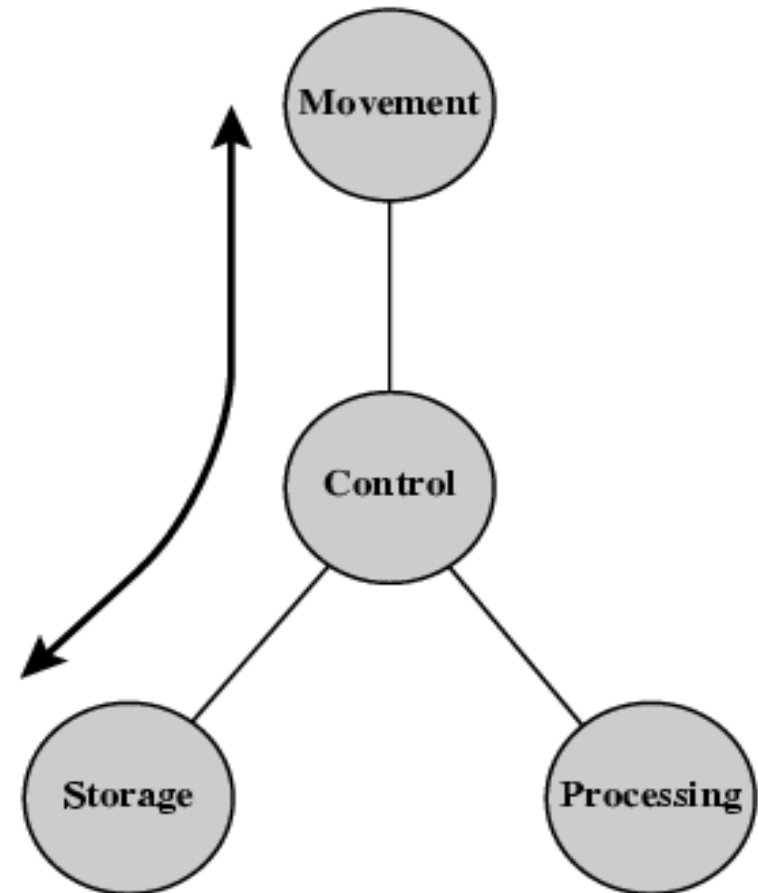
Operacija (c) obdelava iz/v pomnilnik / Operation (c) processing from/to storage

- Obdelava podatkov
- Shranjevanje podatkov
- Prenos podatkov
- Nadzor

- Data processing
- Data storage
- Data movement
- Control
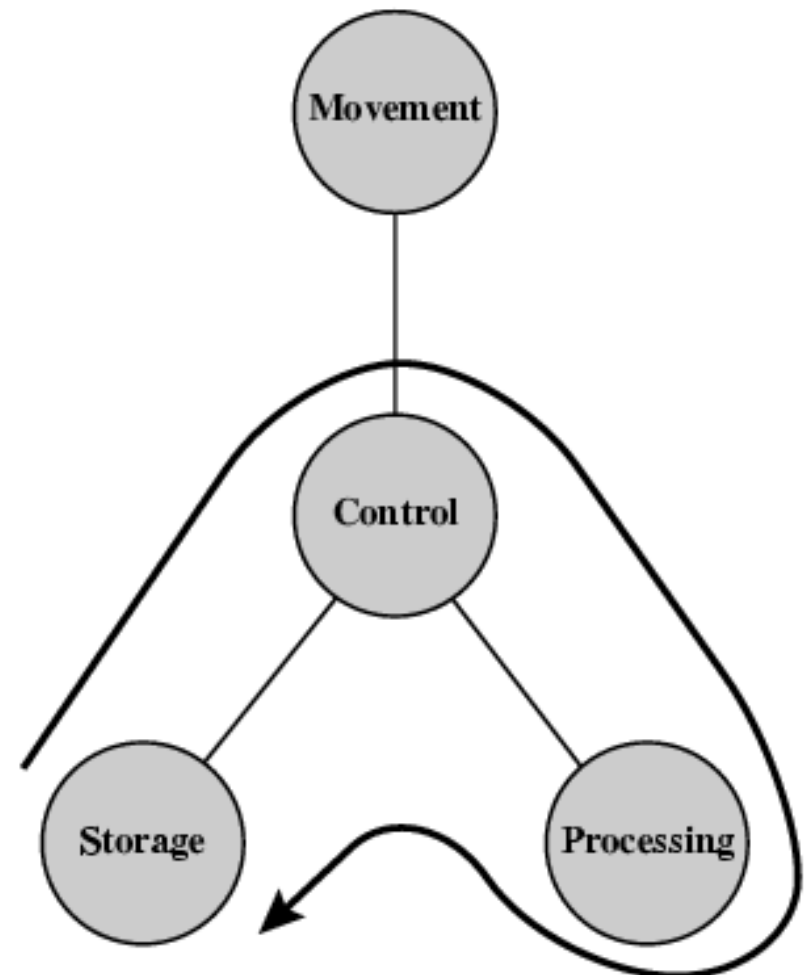
Operacije (d) obdelava iz pomnilnika v V/I
Operation (d) processing from storage to I/O

- Obdelava podatkov
- Shranjevanje podatkov
- Prenos podatkov
- Nadzor

- Data processing
- Data storage
- Data movement
- Control

Sestava – Vrhnji pogled / Structure - Top Level

Peripherals

Computer

Communication lines

Computer

Central Processing Unit

Main Memory

Systems Interconnection

Input Output
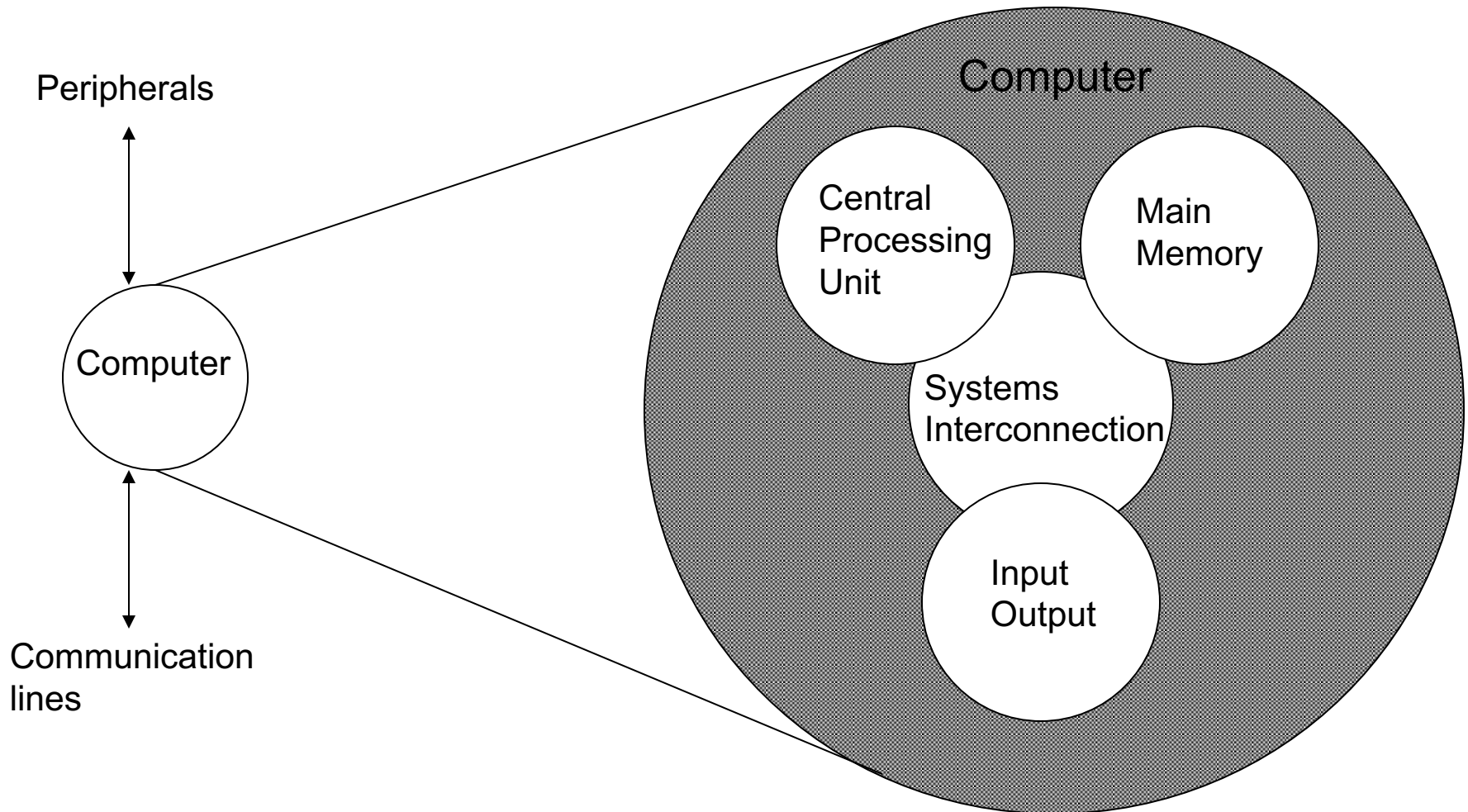
Sestava – centralna procesna enota (CPE)
Structure - the CPU
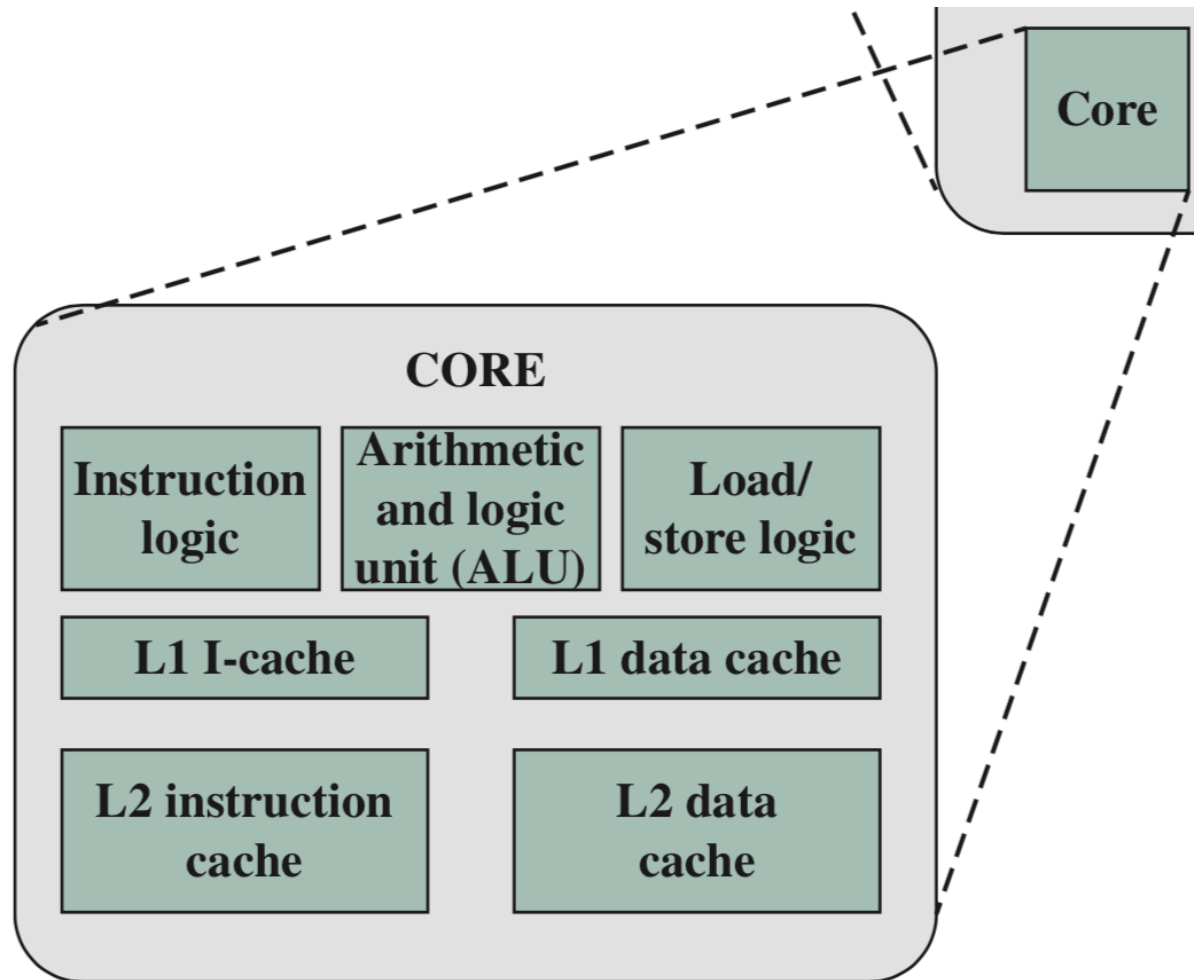
Sestava – krmilna enota
Structure - the control unit
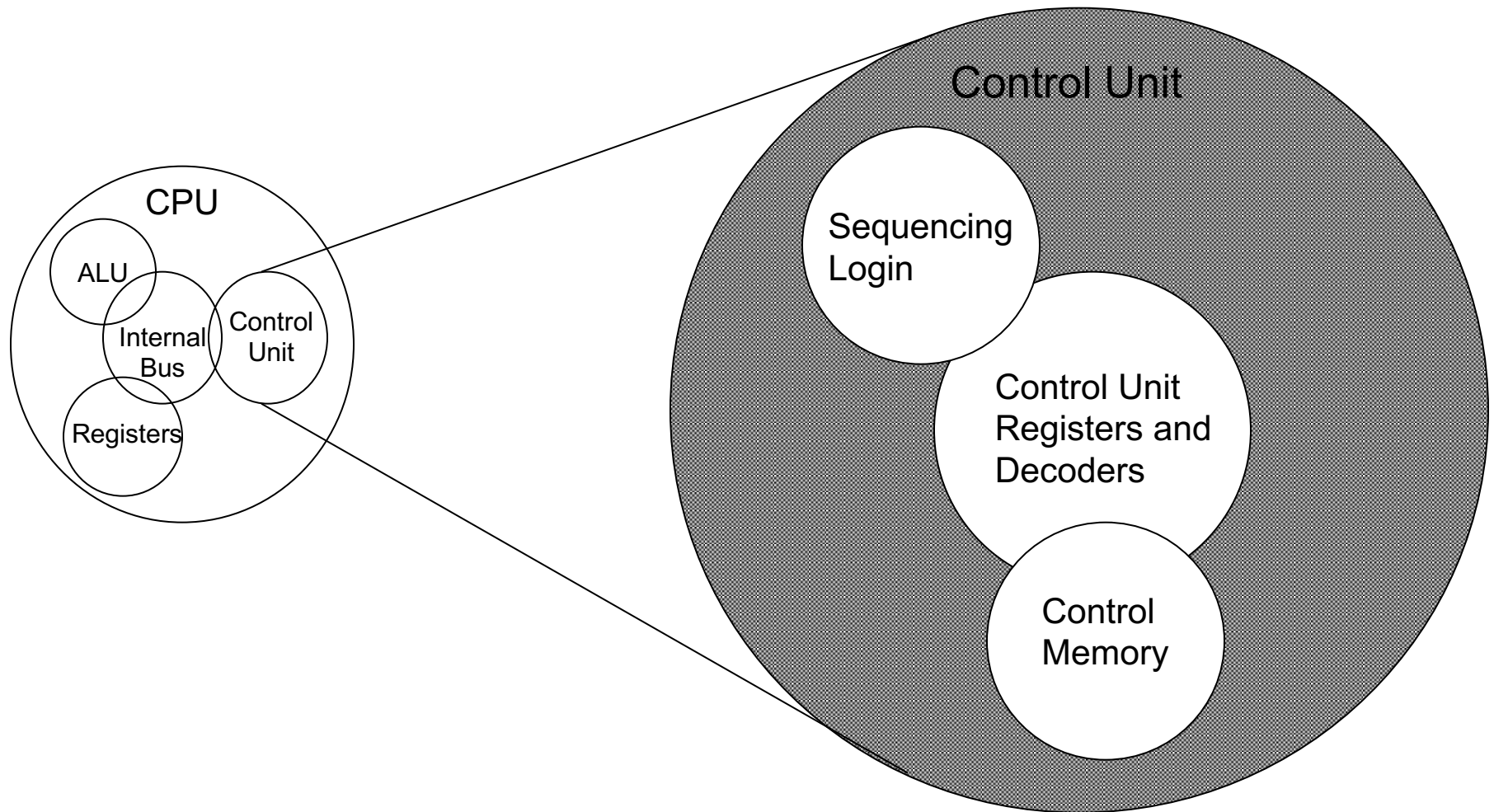
Večjederni računalnik / Multicore computers

Processor chip

PROCESSOR CHIP

| Core | Core | Core | Core |

| L3 cache | L3 cache |

| Core | Core | Core | Core |

Core

CORE

Instruction logic

Arithmetic and logic unit (ALU)

Load/ store logic

L1 I-cache

L1 data cache

L2 instruction cache

L2 data cache
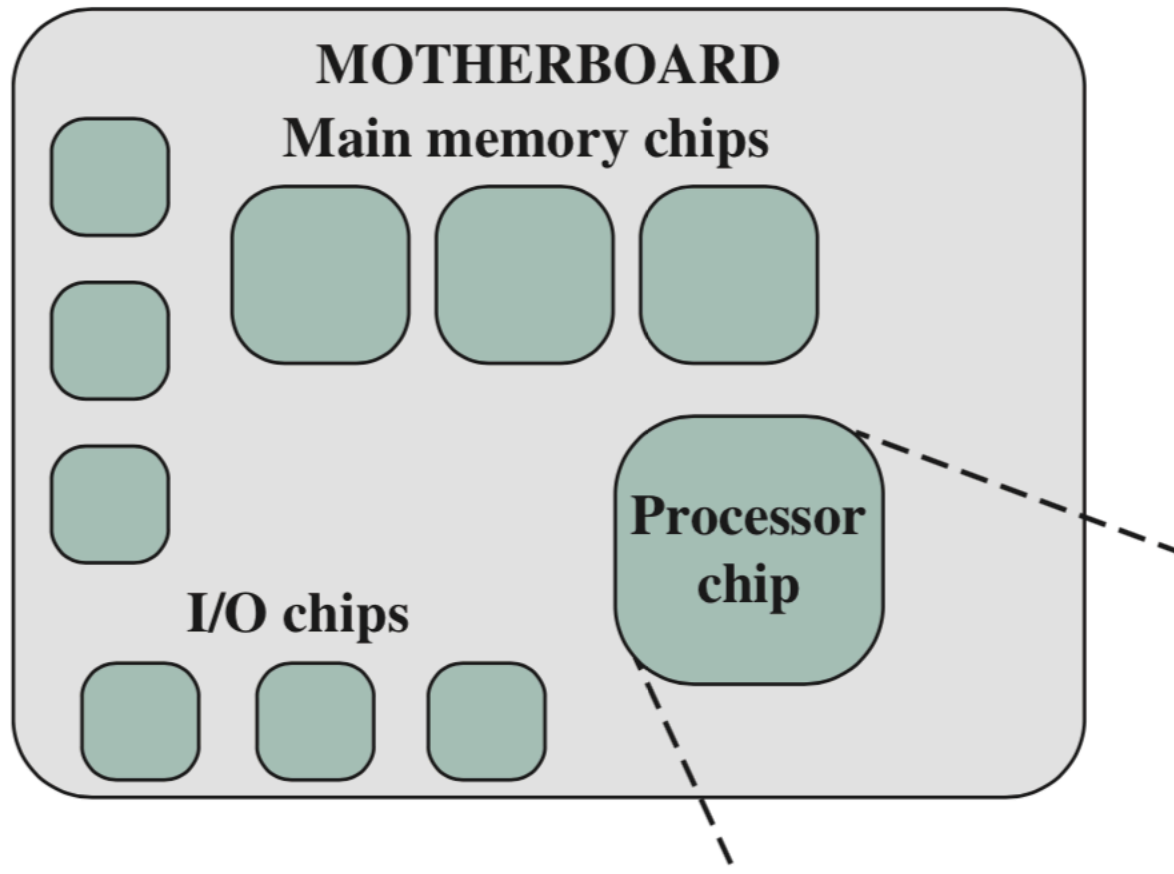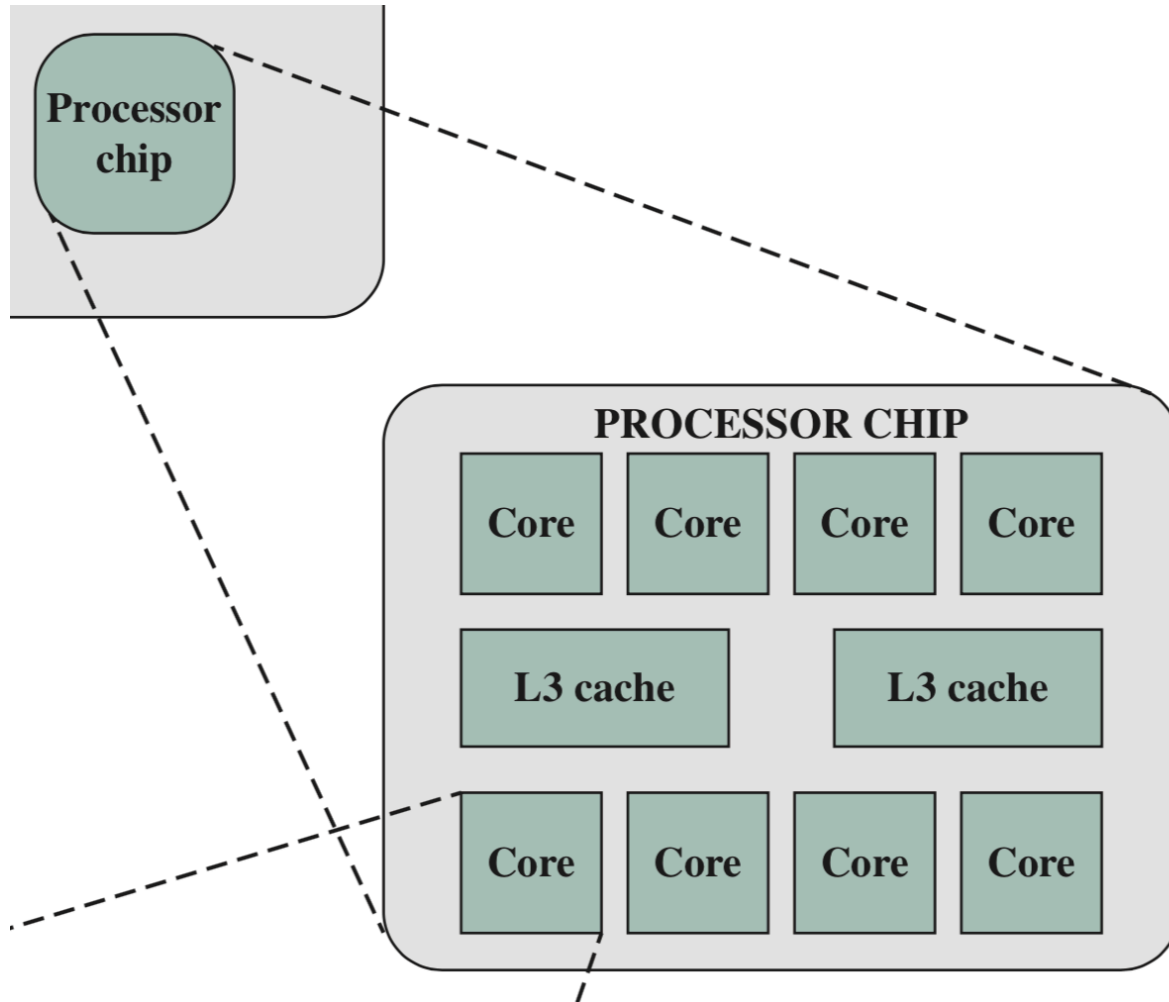
Matična z dvema Intel Quad-core Xeon
Motherboard with two Intel Quad-core Xeon

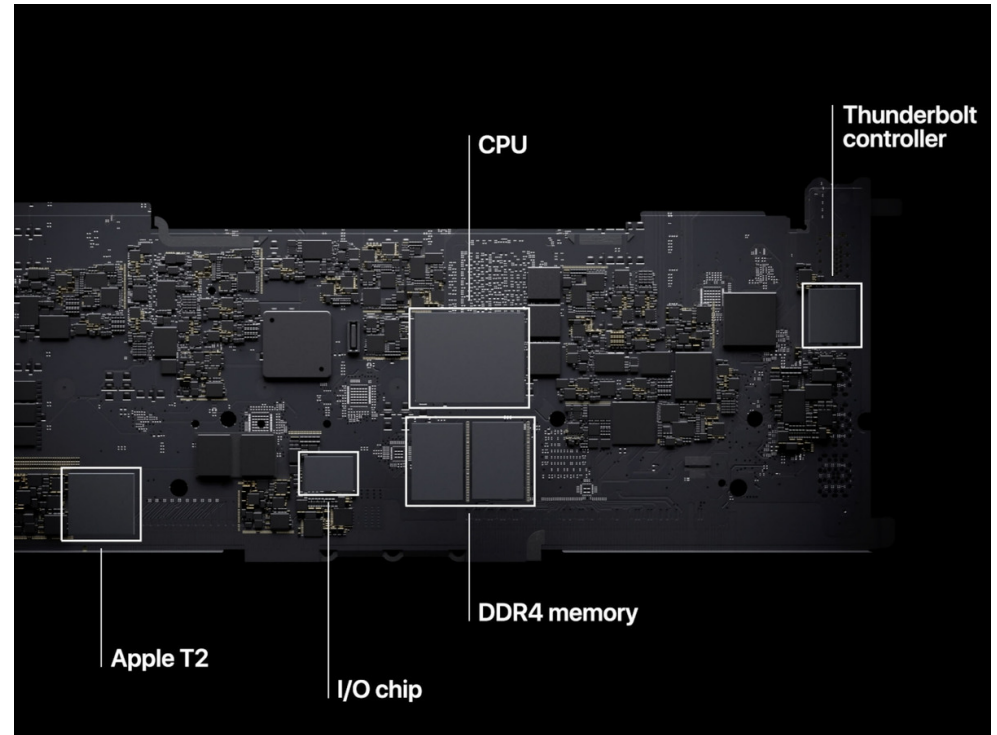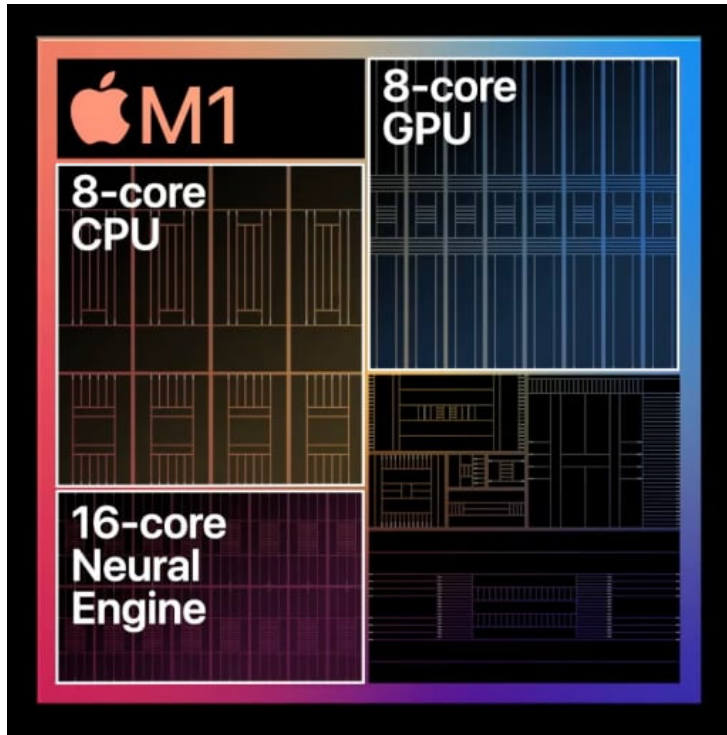x86 architecture
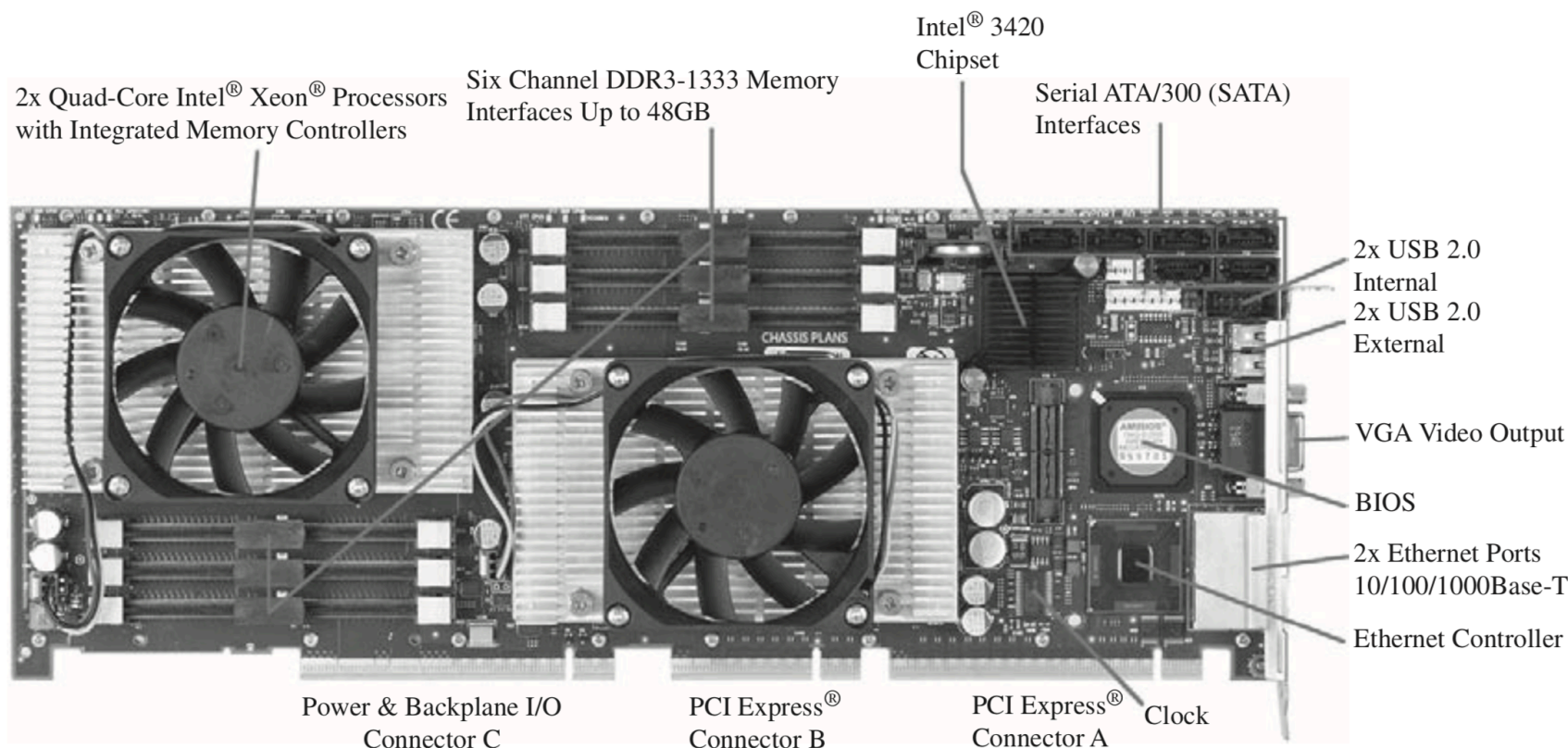
IBM zEnterprise EC 12 CPE osrednjega računal.
IBM zEnterprise EC 12 mainframe CPU
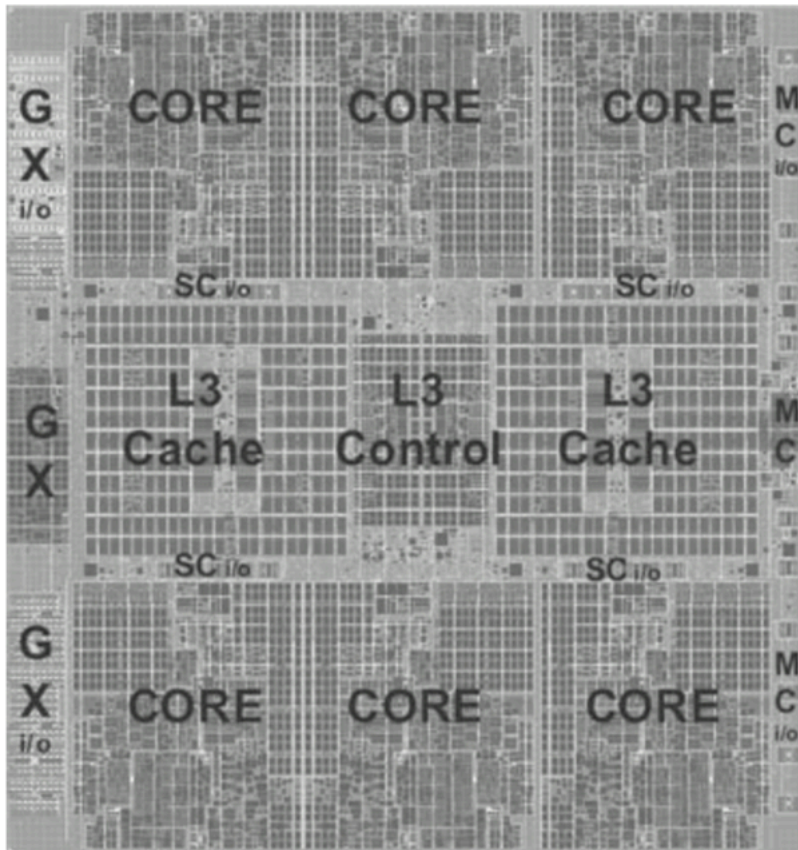
z/Architecture

Apple M1 Sistem na čipu
Apple M1 System on chip

ARM architecture

Vprašanja / Questions?