

МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ  
РОССИЙСКОЙ ФЕДЕРАЦИИ

Федеральное государственное автономное образовательное учреждение  
высшего образования

«Казанский (Приволжский) федеральный университет»

Институт информационных технологий и интеллектуальных систем

УТВЕРЖДАЮ

Директор

Института ИТИС

Абрамский М.М.

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МП



**Система оценивания экзаменационной работы  
по направлению подготовки 09.04.04. “Программная инженерия”  
профиль «Искусственный интеллект в разработке цифровых продуктов (с  
применением электронного обучения и дистанционных образовательных  
технологий)”  
(программа реализуется на английском языке)**

**Examination work assessment system  
in the direction of preparation 09.04.04. “Software Engineering”  
profile "Artificial Intelligence in Digital Product Development (with the use of  
e-learning and distance education technologies)"**

## Examples of assessment of examination tasks

### Fundamentals of programming and IT

1. What is the given expression in C+ / C# / Java:  $100 \gg 3$  ?
2. What is the given expression in C+ / C# / Java languages:  $++c+a++$  if initially  $c = 10$ ,  $a = 5$ ?
3. How can the number 10100 in binary be written in hexadecimal?
4. What decimal number corresponds to the binary number 10001?
5. A loop with a precondition is a loop with a keyword:
  - a.while
  - b.do
  - c.repeat
  - d.foreach
6. What parts does HTTP-response consist of? What do they contain? What is a MIME type? Decode MIME, give 2 examples.

### Working with data and an introduction to AI technologies

1. Select at least 7 entities (Entities) in an arbitrary application that can be stored in the database. Specify at least 7 fields for them (not including ID) with their data types. Relationships between table keys must be demonstrated. Intermediate tables are not considered to be entities.
2. Describe the principles of abstraction and polymorphism in object-oriented programming. Specify the main features of polymorphism.
3. What is inheritance? Why is it needed in object-oriented programming. Give an example of inheritance that reflects its key features (code in any language / UML diagram)
4. What is polymorphism? Why is it needed in object-oriented programming. Give an example of polymorphism (code in any language/UML diagram)
5. Give 2 cases of using artificial intelligence technologies/methods/systems in medicine. Describe which model/method/technology is being used. Why was the problem not solved before the use of AI?
6. How do you understand the term knowledge? How can knowledge be stored? Give an arbitrary example of a way to store knowledge.

Evaluation criterion for task 1:

+1 point for each entity that has more than 7 fields. If less, the entity is not counted.

- +1 point if all tables are adequate for the subject area
- 1 point for each missing foreign key.

Evaluation criterion for task 2:

- 5 points for attributes and their types (0.5 points for each. If no types, then 3 points)
- 5 points for identification/collection methods (0.5 for each attribute)

Evaluation criterion for task 3

- 5 points for each correct request.
- 1 point for each subquery error

Evaluation criterion for assignments 4

- +2 points for problems (1 point for each - only a full description counts)
- +2 points for listing 4 projects/initiatives and what problem it solves (0.5 points for each).
- +4 points for indicating the stages of projects (1 point for each project - there must be 2 stages)
- +2 points for IS (1 point for the information system - only counts if it is indicated why it is profitable to buy)

The response of the applicant to the master's program is evaluated according to the following scale of points.

Topic	Number of questions	Maximum score
Fundamentals of programming and IT	15	45 (3 points per question)
Working with data and an introduction to AI technologies	4	40 (10 points per question)
Portfolio		15
TOTAL		100

Maximum Points	100
The entrance test is considered passed if the applicant scored more than	40 and above
The entrance test is considered NOT passed if the applicant scored	39 and below

In case of equal scores, priority is given to the highest score for the written part of the work. In case of equality of points for the written part of the work, the priority is considered according to the assessment for the part "Information Technology" of the written part.